.H762
1901
v.27

HOOKER'S

ICONES PLANTARUM;

OR,

FIGURES, WITH DESCRIPTIVE CHARACTERS AND REMARKS,

OF NEW AND RARE PLANTS,

SELECTED FROM THE

KEW HERBARIUM.

FOURTH SERIES.

EDITED FOR THE BENTHAM TRUSTEES BY

SIR WILLIAM T. THISELTON-DYER,

K.C.M.G., C.I.E., LL.D., M.A., F.R.S.

HONORARY STUDENT OF CHRIST CHURCH, OXFORD

DIRECTOR, ROYAL BOTANIC GARDENS, KEW.

VOL. VII.

OR VOL. XXVII. OF THE ENTIRE WORK.

PART I. 2601–2625, June 1899.
PART II. 2626–2650, May 1900.
PART III. 2651–2675, August 1900.
PART IV. 2676–2700, February 1901.

DULAU & CO.

37 SOHO SQUARE, LONDON

1901.

Mo.Bot.Garden,

1901.

VOL. VII.—PART I.] [JUNE.

HOOKER'S

ICONES PLANTARUM;

OR,

FIGURES, WITH DESCRIPTIVE CHARACTERS AND REMARKS,

OF NEW AND RARE PLANTS,

SELECTED FROM THE

KEW HERBARIUM.

FOURTH SERIES.

EDITED FOR THE BENTHAM TRUSTEES BY

SIR WILLIAM T. THISELTON-DYER,

K.C.M.G., C.I.E., LL.D., M.A., F.R.S.

Director, Royal Gardens, Kew.

VOL. VII.

OR VOL. XXVII. OF THE ENTIRE WORK.

DULAU & CO.

37 SOHO SQUARE, LONDON.

1899.

SPOTTISWOODE AND CO. PRINTERS, NEW-STREET SQUARE, LONDON.

Price Four Shillings.

1.

2.

3.

M.S. del. et lith

O. Stapf anal.

Plate 2601.

SECALE AFRICANUM, *Stapf.*

Gramineæ. Tribe Hordeæ.

S. africanum, *Stapf* (*sp. nov.*) ; affine *S. montano*, spiculis paulo minoribus, glumis plerumque plus minusve inæqualibus, valvarum nervis magis distinctis, carinis omnibus tenuiter brevissimeque spinuloso scabris diversum.

Culmi graciles, ultra $1\frac{1}{2}$ ped. alti, læves, internodiis superioribus exsertis. *Folia* (superiora tantum nota) glabra, lævia ; vaginæ arctæ ; ligulæ brevissimæ, obtusæ ; laminæ lineares, angustæ, ad 6 poll. longæ. *Spica* linearis, densissima, $2\frac{1}{2}$–3 poll. longa, $2\frac{1}{2}$–3 lin. lata ; rhachis articuli utrinque villoso-barbati. *Spiculæ* oblongæ, 5–6 lin. longæ (aristis exclusis), dense imbricatæ. *Glumæ* lineares sensim in mucronem (vel aristulam) brevem et scabrum attenuatæ, in carinis tenuiter brevissimeque spinuloso-scabræ, inferior plerumque paulo brevior. *Valvæ* lineari-oblongæ, in aristam tenuem scabram rectam 3–$3\frac{1}{2}$ lin. longam productæ, glumas æquantes, 5-nerves, nervis superne viridibus distinctis, carinis ut in glumis. *Paleæ* valvas subæquantes, carinis scabris. *S. cereale*, Thunb. Prodr. Pl. Cap. p. 23 ; Fl. Cap. ed. i. p. 440 ; ed. Schult. p. 118 : Travels ii. p. 168. Durand et Schinz, Consp. Fl. Afr. v. p. 937 (*in nota*).

South Africa : Cape Colony, Calvinia Div., "Lowermost Roggeveld," near Wilhelm Stenkamps Farm (Elands Fontein of *Burchell's* map, about twenty miles south-east of Calvinia), *Thunberg*.

Thunberg says in his Travels l.c. : "These (the lowermost Roggeveld) as well as the others (Roggevelds) have been so named from a kind of rye which grows wild here in abundance near the bushes." Curiously enough it has not been collected again since Thunberg's times. Burchell (*Travels*, i. p. 256) says : "I saw none of the wild rye which has been said to be so abundant as to give the name to this district, but this might be owing to the season of the year." He visited this district in August, when grasses like this would naturally have disappeared. It might be suggested that *S. africanum* is a variety of *S. cereale*, which had been introduced by the farmers and then run wild ; but rye varies very little altogether, and, so far as I am aware, never in a way which would explain the differences that characterise the new species described above.

This and the three following plates were drawn from the original specimens in Thunberg's herbarium at Upsala, for the loan of which Kew is indebted to Professor Fries, who with great liberality placed the whole of Thunberg's South African grasses at our disposal for purposes of comparison.—O. STAPF.

Fig. 1, a spikelet; 2, a pale; 3, a lodicule. *All enlarged.*

M.S. del, et lith.

O. Stapf anal.

Plate 2602

BRIZOPYRUM CILIARE, *Stapf.*

Gramineæ. Tribe Festuceæ.

B. ciliare, *Stapf*; spiculis parvis, valvis secundum margines eximie rigido-ciliatis, ciliis tuberculis impositis uniseriatis, ab omnibus speciebus generis distincta.

Gramen annuum. *Culmi* fasciculati, geniculati, ascendentes vel suberecti, tenues, 4–6 poll. longi, glabri, læves, 2–3-nodi, ad paniculam vaginati vel internodiis intermediis paulo exsertis. *Folia* tenuiter laxeque hirsuta; vaginæ arctæ, inferiores sæpe purpurascentes; ligulæ ad marginem redactæ; laminæ anguste lineares, 1–3 poll. longæ, circiter $\frac{1}{2}$ lin. latæ, sæpe convolutæ, subflaccidæ, summa paniculam longe excedens. *Panicula* spiciformis, oblonga, densissima, interdum lobata, 4–9 lin. longa, 2–3 lin. lata; rhachis ramique teretes, læves, hice brevissimi; pedicelli ad $\frac{1}{2}$ lin. longi. *Spiculæ* perlatæ, ovatæ, turgidæ, $1\frac{1}{4}$–$1\frac{1}{2}$ lin. longæ, 3–6-floræ. *Glumæ* latæ, ovatæ, acutæ vel subacutæ, ad 1 lin. longæ, 5-nerves, tenues, marginibus albis latissimis, inferior in dorso herbaceo hispida pilis e tuberculis ortis, superior subglaber. *Valvæ* ovatæ (a latere) subobtusæ, 1 lin. longæ secundum margines serie ciliorum rigidorum tuberculis impositis munitæ, cæterum glabræ, firmiusculæ, apice purpureæ, subcompressæ, nervis tenuibus. *Paleæ* latæ, obtusæ, carinis scaberulis. Lodiculæ minutæ, sparse ciliolatæ. *Antheræ* $1\frac{1}{2}$ lin. longæ. *Dactylis ciliaris*, Thunb. Prodr. Pl. Cap. p. 22; Fl. Cap. ed. i. p. 429; ed. Schult. p. 115; non Linn., nec Nees, in Linnæa, vii. (1832) p. 322.

South Africa: Cape Colony, without precise locality, *Thunberg*.

This is a very distinct species and quite different from *Lasiochloa ciliaris* Kunth, which this author took to be Thunberg's *Dactylis ciliaris* on the authority of a specimen so named in the herbarium at Berlin. Linnæus's *Dactylis ciliaris* (*Mant.* ii. p. 185) is a perennial with setaceous, perfectly glabrous blades, a small obovoid, capitate panicle, and glumes equalling more or less the valves which are, apart from a white beard at each side of the base, glabrous.

Fig. 1, a ligule; 2, a spikelet; 3, lower glume; 4, upper glume; 5, a valve; 6, a pa'e; 7, a lodicule; 8, an anther; 9, a pistil. *All enlarged.*

M.S.del, et lith

O.Stapf anal.

Plate 2603.

BRIZOPYRUM GLOMERATUM, *Stapf.*

Gramineæ. Tribe Festuceæ.

B. glomeratum, *Stapf*; affine *B. oblitero*, Stapf (*Demazeria oblitera*, Hemsl.), sed habitu erecto, glumis valvisque acutioribus vel mucronatis tenuius nervosis, lodiculis longe ciliatis, antheris plus quam duplo majoribus diversum.

Gramen perenne, cæspitosum innovationibus intravaginalibus numerosis. *Culmi* suberecti, graciles, ad 1 ped. alti, glabri, læves, 2–4-nodi, internodiis exsertis. *Vaginæ* foliorum arctæ, glaberrimæ, læves, inferiores breves, albidæ, firmiusculæ; ligulæ ad marginem minute ciliolatum redactæ; laminæ subsetaceæ, apice calloso induratæ, 2 ad 6 poll. vel ultra longæ, glabræ, læves. *Panicula* spiciformis, linearioblonga, sublobata vel subinterrupta, 1–1¼ poll. longa; rhachis ramique teretes, scaberuli vel hispiduli, hice perbreves; pedicelli brevissimi. *Spiculæ* coarctatæ, latæ, ovatæ vel ellipticæ, circiter 2 lin. longæ, virescentes, 3–6-floræ. *Glumæ* ovatæ, acutæ vel subacuminatæ, 1½ lin. longæ, 3–5-nerves, nervis carinæ scabræ approximatis tenuibus, marginibus albidis latissimis. *Valvæ* ovatæ (a latere) plerumque abrupte mucronatæ, 1–1½ lin. longæ, sub-firmæ, secundum margines ciliatæ vel fere undique a basi ad medium pilosæ, pilis tenuibus acutis, nervis tenuibus. *Paleæ* latæ, obtusæ, carinis scabris vel inferne ciliatis. *Lodiculæ* longiuscule ciliatæ. *Antheræ* ½ lin. longæ. *Poa glomerata*, Thunb. Prod. Pl. Cap. p. 22; Fl. Cap. ed. i. p. 423; ed. Schult. p. 113. Kunth, Enum. Pl. i. p. 363.

South Africa: Cape Colony, without precise locality, *Thunberg*.

Why this species was quoted as a synonym of *Tetrachne Dregei* Nees, by Nees and subsequent authors, is difficult to understand, as there is nothing in Thunberg's description to justify it.—O. Stapf.

Fig. 1, a ligule; 2 and 3, spikelets; 4, lower glume; 5, upper glume (flattened out); 6, a valve (flattened out); 7, a valve (side view); 8, a pale; 9, a lodicule; 10, a pistil. *All enlarged.*

M.S. del, et lith.

O. Stapf a.nat.

Plate 2604.

ACHNERIA CAPILLARIS, *Stapf.*

Gramineæ. Tribe Aveneæ.

A. capillaris, *Stapf*: affinis *A. aurea*, sed annua, glumis acutioribus tenuioribus pubescentibus valvis pro ratione brevioribus glabris diversa.

Gramen annuum. *Culmi* fasciculati, e basi geniculata ascendentes, ad 1 ped. alti, glabri, læves, circiter 2 3-nodi, basi ramosi, ramis floriferis. *Folia* parce villosa; vaginæ laxæ vel tumidæ, inferiores lineis tuberculorum perforatorum munitæ; ligulæ ad series pilorum redactæ; laminæ lineares, acutæ, ½–2 poll. longæ, 1–1½ lin. latæ, exsiccatæ involutæ vel convolutæ, secundum margines inferiores tuberculis stipitatis perforatis munitæ. *Panicula* obovata vel subpyramidalis, 3 poll. longa, 3–4 poll. lata, tandem effusa, iterum trichotome divisa, ramis 2-natis apicem versus spiculigeris filiformibus vel capillaribus glabris vel ad axillas pilosis lævibus præter tuberculos perforatos sessiles sparsos; pedicelli capillares, ¾ ad fere 2 lin. longi. *Spiculæ* ovato oblongæ, 1½ lin. longæ, pallide viridæ; rhachilla minute producta. *Glumæ* ovato-lanceolatæ (a latere), acutæ vel subacuminatæ, hyalinæ, tenuiter pubescentes, 1-nerves. *Valvæ* late ovato-oblongæ (a latere), obtusæ vel obscuræ trilobæ, ¾ lin. longæ, membranaceæ, glabræ, 5–7-nerves, nervis tenuibus sub apice convergentes. *Paleæ* valvis subæquales. *Lodiculæ* glabræ, minutæ. *Antheræ* ¾ lin. longæ. *Holcus capillaris*, Thunb. Fl. Cap. ed. i. p. 412; ed. Schult. p. 110 (excl. diagn.), non Prodr. p. 20. *Sorghum capillare* Roem. & Schult. ii. p. 840. *Andropogon* (?) *capillaris*, Kunth, Rev. Gram. I. p. 166; Enum. I. p. 510.

South Africa: Cape of Good Hope, *Thunberg*.

This grass does not seem to have been collected since Thunberg, nor is there any evidence that subsequent writers have seen his specimen. As, moreover, Thunberg's diagnosis and description of this plant were partly contradictory, it is no wonder that Roemer and Schultes, as well as Kunth, were misled in their endeavours to find a place for it in Andropogoneæ. Hackel (*Monogr. Androp.* p. 651) has already pointed out that it could not belong to this tribe. Thunberg says in *Prodr. Pl. Cap.* l.c. and in the diagnosis of the species in *Fl. Cap.* l.c., 'floseulo hermaphrodito mutico, masculo aristato' and 'glumis glabris,' whilst in the description no mention is made of the

Coll. by Schlechter, No. 11218 Det. Stapf in MBG.

heteromorphism of the florets, and the glumes are described as having a 'carina subvillosa.' As the description agrees otherwise very well with the specimen named *Holcus capillaris* in his herbarium, I assume that Thunberg drew up his diagnosis from a different plant, perhaps a *Holcus* or *Aira*.—O. Stapf.

Fig. 1, a ligule; 2, a spikelet; 3, the 2 florets; 4, a valve (flattened out); 5, an upper floret; 6, pale of an upper floret (5 and 6), showing the minute continuation of the rhachilla at the base; 7, a lodicule; 8, a pistil. *All enlarged.*

M.S del et lith

O.Stapf anal

Plate 2605.

DEYEUXIA SCLEROPHYLLA, *Stapf*.

GRAMINEÆ. Tribe AGROSTIDEÆ.

D. sclerophylla, *Stapf* (*sp. nov.*) ; nulli speciei arcte affinis, glumis valvaque rigidis, arista e sinu orta distincta, potius sectionem novam *Sclerodeyeuxiam* sistens.

Gramen dense cæspitosum innovationibus intravaginalibus. *Culmi* stricte erecti, 1 2½ ped. alti, glabri, læves, plerumque 2-nodi, internodiis 2–1 exsertis. *Folia* glaberrima, lævia, basi arcte et distiche congesta, sæpe (præcipue in innovationibus) subflabellata ; vaginæ compressæ, obtuse carinatæ, arctæ, inferiores circiter 3 poll. longæ, sulcato-striatæ ; ligulæ hyalinæ, ovatæ, acutæ ad 2 lin. longæ ; laminæ erectæ, lineares, arcte plicatæ, perfirmæ, rigidæ, basi transverse callosæ, subpungentes, 6–9 poll. longæ, ¾–⅘ lin. latæ (in statu plicato), subtus lævissimæ, supra scabridæ et sulcato-nervosæ, marginibus lævibus. *Panicula* erecta, linearis, 4–6 poll. longa, contracta ; rhachis lævis, gracilis ; rami fasciculati vel geminati, erecti, inæquales, longiores 1–2 poll. longi, parce ramulosi vel simplices, a basi spiculigeri vel inferne plus minusve nudi, filiformes, læves vel superne scaberuli ; pedicelli laterales circiter 1 lin. longi, cæteri sæpe multo longiores, superne incrassati, læviusculi. *Spiculæ* cinereo-virescentes vel plus minusve glauco-purpurascentes, 3½ lin. longæ ; rhachillæ processus 1 lin. longus, plumosus. *Glumæ* subæquales, lanceolatæ, mucronato-acuminatæ, carinatæ, subcoriaceæ, 3-nerves, omnino scabridæ. *Valva* lineari-lanceolata, 2½ lin. longa, firma, omnino scaberula, sub–7-nervis, ad ⅓ bifida lobis bidentulis vel bimucronatis, e sinu aristata, arista scabra patulo-recurva ; callus pilosus, pilis ⅓–¼ valvæ æquantibus. *Palea* angusta, 2-dentula, carinis superne scaberulis. *Lodiculæ* oblongæ, 2-dentatæ, fere ½ lin. longæ. *Antheræ* 1 lin. longæ. *Ovarium* glabrum. *Caryopsis* lineari oblonga, 1 lin. paulo longior, a dorso compressa ; embryo parvus ; hilum ⅓ caryopsis æquans.

NEW GUINEA : Mount Scratchley, 12,200 feet, *Giulianetti*.

The glumes are as rigid as those of *Ammophila*, and the valve, though thinner, is still firmer than in any other *Deyeuxia* I have seen. The leaves are very like in structure to the leaves of *Ammophila arenaria*, but the blades are more compressed. The awn springs from the sinus of the valve, whilst it is, I believe, always dorsal in the true

Deyeuxias, and reduced to a subterminal mucro or quite absent in *Ammophila*. This insertion of the awn in connection with the rigid side lobes and the shortly excurrent side nerves would bring the species near to *Pentapogon*, but in that genus the rhachilla is glabrous and the ovary top conspicuously appendaged. The great similarity of the structure of the blades of *Deyeuxia sclerophylla* and of the other grasses of Giulianetti's collection from Mount Scratchley, with the exception of *Microlæna*, is very singular, and indicative of great (probable periodical) dryness of the air.—O. Stapf.

Fig. 1, a ligule; 2, a spikelet; 3, a floret, with the continuation of the rhachilla; 4, a pale; 5, a grain, back view; 6, the same, front view. *All enlarged.*

5.

6

7

8

4.

1.

2

3.

M.S. del, et lith.

O. Stapf anal.

Plate 2606.

DANTHONIA OREOBOLOIDES, *Stapf*.

Gramineæ. Tribe Aveneæ.

D. oreoboloides, *Stapf* (*sp. nov.*); affinis *D. exigua*, Stapf (*D. pauciflora*, Buch. non R. Brown; *Triodia exigua*, Kirk), sed minor, tenuior, spiculis minoribus, valvis exsertis integris acuminatis distincta.

Gramen cæspites densissimos 1 poll. vix altiores formans, innovationibus creberrimis cum culmis floriferis fasciculatis. *Culmi* floriferi vix 1 poll. alti, ad medium vaginati, glaberrimi, lævissimi, tenues. *Folia* glabra, in innovationibus et ad culmorum basin distiche imbricata; vaginæ arctæ, laxe striatæ; ligulæ pilorum brevissimorum serie notatæ; laminæ tenuiter setaceo subulatæ, acutæ, $\frac{1}{4}$–$\frac{1}{3}$ poll. longæ, curvæ, læves. *Spiculæ* solitariæ in culmorum apice, albidæ, $1\frac{1}{2}$ lin. longæ, circiter 3-floræ; rhachilla parce pilosula. *Glumæ* æquales, ovato ellipticæ, subacutæ vel obtusæ, ima basi obsolete 5-nerves, cæterum 1-nerves. *Valvæ* oblongæ, integræ, breviter acuminatæ, vix $1\frac{1}{4}$ lin. longæ, ad latera utrinque penicillis minutis ornatæ, 7-nerves, nervo medio interdum in mucronulum excurrente, callo minuto barbulato obtuso. *Palea* valvam subequans, carinis superne scabris. *Lodiculæ* glabræ. *Antheræ* $\frac{1}{4}$ lin. longæ. *Ovarium* glabrum.

New Guinea: Mount Scratchley, 12,200 feet, *Giulianetti*.

I have no doubt that this is the grass which Sir Ferdinand von Müller described in *Trans. Roy. Soc. Vict.* i. 2. pp. 38, 39, and named provisionally *Festuca oreoboloides*.

Fig. 1, a part of the plant; 2, a ligule; 3, a spikelet; 4, a valve (flattened out); 5, a floret (side view); 6, a pale; 7, a lodicule; 8, a pistil. *All enlarged.*

J.F.Schaller del et lith

C.Stapf ad nat.

Plate 2607.

POA PAPUANA, *Stapf.*

Gramineæ. Tribe, Festuceæ.

Poa papuana, *Stapf* (*sp. nov.*) ; affinis *P. minimiflora*, Stapf, sed foliis minus tenuibus rigidioribus scaberulis, spiculis paulo majoribus, valvis acute acuminatis quam palea lævi paululo brevioribus diversa.

Gramen dense cæspitosum, innovationibus crebris intravaginalibus. *Culmi* erecti, graciles, 3–4 poll. alti, læves, vix ad medium vaginati, internodiis summo excepto brevissimis, basalibus paucis. *Folia* ad basin congesta, interdum subflabellata, glaberrima ; vaginæ aretæ, carinatæ, striatæ ; ligulæ acutissimæ, ad 1 lin. longæ, hyalinæ ; laminæ setaceæ, lateraliter compressæ, canaliculatæ, apice oblique brevissimeque acutatæ, 1½–3 poll. longæ, rigidæ, erectæ, scaberulæ, imprimis ad margines et carinas, præterea sæpe minutissime tuberculatæ. *Paniculæ* oblongæ, 7–9 lin. longæ, strictæ, rami inferiores fasciculati vel geminati, simplices, 4–1-spiculati, stricti, oblique erecti, filiformes scaberuli, in axillis glanduligeri ; pedicelli laterales, ½ lin. longi, ramis similes. *Spiculæ* 1 floræ, oblongæ, acuminatæ, 1 lin. paululo longiores, virides, vel purpureo-fuscescentes, interdum variegatæ ; rhachillæ processus brevis. *Glumæ* ovatæ, acutæ, vel acuminatæ, dorso basique herbaceæ, in carina scaberulæ, inferior mediam spiculam æquans, 1–3-nervis, superior paulo longior, latior, 3 nervis. *Valvæ* oblongæ, acute acuminatæ, 1 lin. paululo longior, in apice et ad margines angustissime hyalinæ, cæterum herbaceæ, læves, ob nervos laterales interiores suppressos 3-nerves. *Palea* valvas paulo superantes, acute 2-dentatæ, læves. *Lodiculæ* oblongæ, integræ. *Antheræ* ⅓ lin. longæ.

New Guinea : Mount Scratchley, 12,200 ft., *Giulianetti.*

Poa papuana, *P. callosa*, *P. minimiflora* and *P. epileuca*, Stapf, form a small natural group, the affinity of which lies evidently with *Poa kerguelensis*, Hook. f. and *P. antarctica*, Stapf (*Triodia antarctica*, Hook. f). In my paper on the flora of Kinabalu (*Trans. Linn. Soc.*, ser. 2, iv. p. 247), I have pointed out that the grass which I then described as *Deyeuxia epileuca* was "a very marked species, the affinity of which lies rather with some Australian species (of *Deyeuxia*) than with any others, though it is far from being closely connected" and that "the spikelets come, perhaps, nearer to those of *D. gunniana*,

Benth."; but I was then "still doubtful as to the true systematic position" of the grass (*l. c.* p. 105). The discovery of *Poa papuana* and *P. minimiflora* has given me now the key to it in the direction indicated above. This group of *Poa* is well marked off from the rest by the minute 1–2-flowered spikelets and the firmer texture of the glumes and valves, and will probably have to stand as a section of *Poa*. *Deyeuxia gunniana*, Benth. and the closely allied *D. breviglumis*, Benth., are, in general habit, strikingly similar to *P. papuana* and *P. minimiflora*, but the obtuse glumes and the minutely emarginate and mucronulate valves with basewards evanescent nerves point to a different genus. *P. papuana* and perhaps also *P. minimiflora* are evidently the same grasses which Sir Ferdinand von Mueller enumerated as *Festuca pusilla* (*Trans. Roy. Soc. Victoria*, i. pt. 2, p. 38).—O. Stapf.

Fig. 1, a ligule; 2, a spikelet; 3, a floret with the continuation of the rhachilla; 4, a valve (flattened out); 5, a pale. *All enlarged.*

M.S. del et lith

O.Stapf anal

Plate 2608.

POA MINIMIFLORA, *Stapf.*

Gramineæ. Tribe, Festuceæ.

Poa minimiflora, *Stapf (sp. nov.)*: affinis *Poa epiloica*, Stapf (*Deyeuxia epiloica*, Stapf), sed foliis tenuiter setaceis, paniculis uberioribus, spiculis minoribus diversa.

Gramen dense cæspitosum, innovationibus intravaginalibus. *Culmi* erecti, gracillimi, 3–5 poll. alti, læves, glabri, ad medium dense vaginati, internodiis paucis summo excepto brevibus subbasalibus. *Folia* ad basin congesta, glaberrima, lævia; vaginæ arctæ, laxe striatæ; ligulæ breves, acutæ, hyalinæ; laminæ tenuiter setaceæ, canaliculatæ, acutæ, $1\frac{1}{2}$–3 poll. longæ, $\frac{1}{4}$ lin. latæ (expansæ), rigidulæ, erectæ. *Panicula* lineari-oblongæ vel lineares, $\frac{3}{4}$–1 poll. longæ, subcontractæ, strictæ, rami solitarii vel geminati, stricte-erecti, inferiores 3–4 lin. longi, parce ramulosi vel ad racemum redacti, ut rhachis filiformes, scabri, in axillis glandulis atris muniti; pedicelli ramulis similes, $\frac{1}{4}$–1 lin. longi. *Spiculæ* 1–2-floræ, oblongæ vel ovatæ, vix 1 lin. longæ, læte virides vel cupreo-purpurascentes, variegatæ; rhachillæ processus longiusculus, glaber. *Glumæ* ovatæ, subacutæ, dorso basique herbaceæ, in carina scaberulæ, inferior mediam spiculam æquans, 1-nervis, superior paulo longior latiorque, infra 3-nervis. *Valvæ* oblique oblongæ vel semi-ovatæ, acutæ vel subobtusæ, $\frac{3}{4}$–$\frac{7}{8}$ lin. longæ, ad margines et in apice anguste albo hyalinæ, cæterum herbaceæ, superne minutissime scaberulæ, 5–3-nerves, nervis lateralibus tenuissimis vel interioribus obsoletis. *Palæ* valvas æquantes, carinis superne scaberulis. *Lodiculæ* 2 lobæ. *Caryopsis* oblonga, triquetra, $\frac{1}{2}$ lin. longa, antice plus minusve sulcata; embryo minutus; hilum punctiforme.

New Guinea: Mount Scratchley, 12,200 ft., *Giulianetti*. O. Stapf.

Fig. 1, a ligule; 2, a one flowered spikelet: 3, floret of the same, with the continuation of the rhachilla; 4, a two-flowered spikelet: 5, a pale, flattened from the back; 6, a grain, side view; 7, the same, front view; 8, the same, cross section. *All enlarged.*

M S del et lith.

C Stapf anal

Plate 2609.

CROSSOTROPIS GRANDIGLUMIS, *Rendle.*

Gramineæ. Tribe Chlorideæ.

Crossotropis, *Stapf in Thiselton-Dyer, Fl. Cap.* vii. p. 317. *Spiculæ* 3–9-floræ, lateraliter compressæ, subsessiles, subdistichæ, in paniculæ ramis rigidis; **rhachilla tenuis, supra glumas et inter valvas** articulata. *Gluma* subæquales vel æquales, angustæ, membranaceæ, 1-nerves, firme carinatæ, persistentes. *Valvæ* subremotæ, lineari-oblongæ (a latere visæ), breviter 2-lobæ, e sinu mucronatæ vel breviter aristatæ, membranaceæ, 3-nerves, nervis lateralibus submarginalibus subpercurrentibus rigide ciliatis; callus parvus, pilosulus. *Palea* angustæ, 2-carinatæ, valvis paulo breviores. *Lodiculæ* 2, cuneatæ, parvæ. Stamina 3. *Ovarium* glabrum; styli distincti, gracillimi; stigmata plumosa, lateraliter exserta. *Caryopsis* oblonga, a dorso admodum compressa, concava vel plana, valva palea que vix mutata inclusa; embryo dimidium caryopsis subæquans; hilum punctiforme, basale. – Gramina *annua vel perennia*. Foliorum laminæ *plerumque plana*, ligulæ *hyalinæ*. Panicula *contracta vel patula*; rami *stricti a basi spiculigeri*. Spiculæ *approximatæ vel remotæ, summa terminalis.*

C. grandiglumis, *Rendle in Cat. Afr. Pl. Welw.* ii 2. p. 226: a speciebus generis cæteris duratione perenni et habitu peculiari differt.

Gramen perenne, cæspitosum. *Culmi* erecti vel geniculati, ½–1½ ped. alti, glabri, lævi, 2–3-nodi internodiis superioribus tandem exsertis. *Folia* basin versus congesta; vaginæ glabræ, rarissime pilis longis patulis hic inde conspersæ, firmulæ, striatæ, superiores scabræ; ligulæ truncatæ, ad ⅔ lin. longæ; laminæ lineares, breviter acutatæ, interdum subpungentes, 1–2½ poll. longæ, 1½–2½ lin. latæ, planæ vel subulatim convolutæ, glabræ, scabræ. *Panicula* 4–6 poll. longa, tandem 4–9 poll. lata, stricta: axis angulata, scabra vel hispidula: rami solitarii vel 2–3 approximati, 2–5 poll. longi, primo erecti, tunc patuli, sæpe horizontales vel subdeflexi, basi villosi, hispiduli. *Spiculæ* remotæ, laterales brevissime pedicellati, appressæ, 3½–5 lin. longæ; rhachilla pilosula. *Gluma* lanceolatæ, subulato-acuminatæ vel in aristas productæ, 3½–5 lin. longæ, scaberulæ. *Valvæ* ad 2 lin. longæ, mucronatæ, in nervo medio appresse tenuiterque in lateralibus rigide et patule ciliatæ. *Palea* dorso tenuissime pubescentes, carinis scabris. *Antheræ* ad ½ lin. longæ. *Caryopsis* ultra 1 lin. longa. *Leptochloa grandiglumis*, Nees, Fl. Afr. Austr.

p. 252. Steud. Syn. Pl. Glum. i. p. 210. *Diplachne grandiglumis*, Hack. in Engl. Bot. Jahrb. xi. p. 404. Durand & Schinz, Consp. Fl. Afr. v. p. 878.

South Africa. Cape Colony : Albert Div., Nieuwe Hantem, stony places, 4,500–5,000 feet, *Drège* ; Aliwal North Div., between Witte Bergen and Krai River, 4,500–5,000 feet, *Drège*. Griqualand West : between Klip Fontein and Night Fontein, *Burchell*, 2167. Bechuanaland : in stony plains near Groot Kuil, *Marloth*, 989. Orange Free State : near the Caledon River, *Zeyher*, 1844, near Winberg, *Buchanan*, 246. Transvaal : Rustenberg, *MacLean* ; near Nylenstrom, *Nelson*, 99. Natal : sandy valley of Tugela River, 1,000 feet, *Buchanan*, 279.

A *minor* variety of *C. grandiglumis* was described by Mr. A. Rendle, l.c, from specimens collected by Welwitsch in Pungo Andongo (2,709) and in Huilla (7,492). It has 'spikelets smaller and more delicate than in the type, 2½–3 lines long ; flowering glumes subhyaline, more prominently awned than in the type, pale hyaline.'

Crossotropis is allied to *Triraphis* and *Leptocarydion*, which has erroneously been reduced to *Triodia*, a very different and natural genus having 7–9 nerved valves. *Triraphis* differs in the usually distinctly pedicelled spikelets, which are often arranged in compound and dense panicles and the longer awns, and excurrent side nerves of the valves. *Leptocarydion*, on the other hand, has dense spiciform panicles, long and finely awned valves, and peculiar leaf blades. The true *Leptochloe*, to which Nees referred *C. grandiglumis*, differ in the usually very minute spikelets, entire, muticous, broader valves, and mostly globose or subglobose grain. *Diplachne*, again, to which Hackel referred the plant figured here, has firmer valves of the peculiar texture of those of *Eragrostis* and relatively short glumes, the florets being usually much exserted from the latter. Two other species from tropical Africa and Arabia, viz. *C. mollis*, Stapf (*Leptochloa mollis*, Kunth ; *Triodia mollis*, Durand & Schinz), and *C. arenaria*, Stapf (*Diplachne arenaria*, Nees ; *Uralepis arenaria*, Steud.), have spikelets of a very similar structure. **They are both annuals.**—O. Stapf.

Fig. 1, a ligule ; 2, a terminal spikelet ; 3, lower glume ; 4, upper glume ; 5, a floret with the contiguous rhachilla joint ; 6, a valve ; 7, a pale ; 8, a lodicule ; 9, a grain, back view ; 10, the same, front view ; 11, cross section of a grain. *All enlarged.*

A. Rendle, Herb. Cantab. 11. 1. 126.

M.S del, et lith.

C. Stapf anal

Plate 2610.

POGONARTHRIA FALCATA, *Rendle.*

Gramineæ. Tribe Eragrosteæ.

Pogonarthria, *Stapf in Thiselton-Dyer, Fl. Cap.* vii. p. 316. *Spiculæ* 2-8-floræ, lateraliter compressæ, subsessiles, plus minusve imbricatæ, secundæ, in ramis paniculæ subspiraliter dispositæ; rhachilla fragilis, supra glumas et inter valvas articulata, articulis apice ciliatis. *Gluma* rigide membranaceæ, persistentes, 1-nerves. *Valvæ* oblongæ, rigide membranaceæ, acuminatæ, glaberrimæ, 3-nerves, nervis lateralibus superne evanescentibus. *Palea* 2-carinatæ, valvis paulo breviores. *Lodiculæ* 2, minutæ, delicatulæ. *Stamina* 3. *Ovarium* glabrum; styli distincti; stigmata plumosa. *Caryopsis* valva paleaque vix mutata arcte inclusa, lineari-oblonga, obtuse triquetra; embryo dimidio caryopsis brevior; hilum punctiforme, basale.—Gramen *annuum vel perennans, rigidum.* Foliorum *laminæ rigidæ, plerumque convolutæ.* Panicula *stricta ramis strictis patulis plus minus curvatis in spiras irregulares dispositis.* Spiculæ *secundæ, arctæ, lividæ purpurascentes vel nigrescentes.*

P. falcata, *Rendle in Cat. Afr. Pl. Welw.* ii. 2, p. 232 (*sp. unica*). *Gramen* cæspitosum ore vaginarum excepto glaberrimum. *Culmi* stricti, erecti vel subgeniculati, 1-1½ ped. alti, teretes, læves, circiter 3-nodi, internodiis exsertis. *Foliorum* vaginæ arctæ, læves, teretes, ore barbatæ; ligulæ ad lineam ciliorum minutorum redactæ; laminæ lineares, setaceo-attenuatæ, 4-8 poll. longæ, 1-2 lin. latæ, planæ vel sæpius convolutæ, rigidæ, subglaucæ, læves. *Panicula* linearis, 4-10 poll. longa, ½-2 poll. lata; rhachis scaberula, sulcata; rami sæpe irregulariter approximati, ad 1 poll. longi, simplices, a basi spiculigeri, scabridi, dorso plani. *Spiculæ* 1½-3 lin. longæ; rhachillæ articuli ad ¼ lin. longi. *Glumæ* lanceolatæ vel lanceolato-oblongæ, rubescentes, subacuminatæ, scaberulæ, inferior ⅔-⅚ lin., superior ¾-1 lin. longa. *Valvæ* a latere visæ lanceolatæ, expansæ oblongæ, acute acuminatæ vel mucronulatæ, 1 lin. longæ, callo minutissimo obtuso glabro. *Palearum* carinæ scabræ. *Antheræ* ⅔-⅚ lin. longæ. *Caryopsis* ⅔ lin. longa. *Leptochloa falcata,* Hack. in Bull. Herb. Boiss. iii. p. 386 and iv. Append. iii. p. 21. *Eragrostis* sp. Nees in Linnæa, xx. p. 255.

Tropical Africa. British Central Africa: Nyasaland, Nyika Mountains, 4,000-6,000 feet, *Whyte.* Rhodesia: Leshumo Valley, *Holub.*

Portuguese West Africa: Loanda, Museque de Luiz Gomes, *Welwitsch*, 7287, 7367; Barro do Bengo, between Quicuxe and Cacuaco, *Welwitsch*, 7287 C; Pungo Andongo, between Lombe and Quibinda, *Welwitsch*, 7408; Huilla, between Lopollo and Monino, *Welwitsch*, 7487.

South Africa. Griqualand West: Herbert Division, St. Clair, Douglas, *Orpen*, 256; Asbestos Mountains, *Burchell*, 2101. Orange Free State: Olifants Fontein, *Rehmann*, 3514; rocky and grassy hills on the Groot and Klein Vet River, 4,000–5,000 feet, *Zeyher*, 1840; *Burke*; near Bloemfontein, *Rehmann*, 3753. Transvaal: in the Boshveld, between Eland River and Klippan, *Rehmann*, 5118; near Lydenburg, *Atherstone*, 72. Basutoland: near Leribe, *Buchanan*, 128. Natal: by the Tugela River, 600 feet, *Buchanan*, 242; near Umlaas Drift, *Wood*, 1910.

Hackel, who described this species under *Leptochloa*, has already remarked that it differs considerably from all other species of *Leptochloa*. In fact, the affinity lies with *Eragrostis*, to certain species of which it approaches rather closely.—O. Stapf.

Fig. 1, a ligule; 2, a spikelet; 3, an intermediate rhachilla joint; 4, terminal rhachilla joint; 5, lower glume; 6, upper glume; 7, a valve; 8, a pale with rhachilla joint; 9, a lodicule; 10, front view of a grain with hilum; 11, side view; 12, cross section of a grain. *All enlarged.*

M.J. del. et lith.

O.Stapf anal.

Plate 2611.

LOPHACME DIGITATA, *Stapf.*

Gramineæ. Tribe Chlorideæ.

Lophacme, *Stapf, in Thiselton-Dyer, Fl. Cap.* vii. p. 316. *Spiculæ* circiter 6-valves, valvis 2 infimis flores ♂ gerentibus cæteris gradatim minoribus vacuis arcte se invicem amplectentibus, subsessiles in ramis paniculæ gracilibus simplicibus s bdigitatis; rhachilla tenuis, glabra, supra glumas et inter valvas 2 infimas articulata, superne tenax. *Glumæ* inæquales, angustæ, membranaceæ, 1-nerves, carinatæ, persistentes. *Valvæ* florigeræ lineari-lanceolatæ, 2-dentatæ, quam glumæ contiguæ paulo breviores, membranaceæ, 3 nerves, nervis lateralibus superne evanescentibus e sinu tenuiter aristatæ, callo minute piloso; valvæ vacuæ integræ, in aristam abeuntes, callo nullo. *Paleæ* angustissimæ, 2-carinatæ, valvis paulo breviores. *Lodiculæ* minutæ, cuneatæ, hyalinæ. *Stamina* 3. *Ovarium* glabrum; styli distincti, breves; stigmata laxe plumosa, lateraliter exserta. *Caryopsis* ignota.—Gramen *perenne* (?). Foliorum *laminæ planæ; ligulæ ad marginem ciliatam redactæ.* Panicula *subdigitata e ramis flexuosis gracilibus subspiciformibus composita.*

L. digitata, *Stapf (sp. unica).* *Culmi* graciles, erecti, ultra 1 ped. alti, glabri, læves; internodium summum perlongum. *Folia* culmea glaberrima; vaginæ arctæ, teretes, læves, summa 5–5½ poll. longa; laminæ lineares, acutæ, subglaucæ, læves, summæ brevissimæ vel obsoletæ, inferiores 1½ poll. longa, 1–1¼ lin. latæ. *Panicula* 3½–5 poll. longa; axis filiformis, 1 poll brevior, scaberula, purpurascens; rami 4–5, tenuiter filiformes, 3–4½ poll. longi, scaberuli, purpurascentes, a basi vel fere a basi spiculigeri. *Spiculæ* infe iores dissitæ, superiores approximatæ, angustæ, rubescentes, 2½–3 lin. longæ. *Glumæ* lineari-lanceolatæ, acutæ, glabræ, inferior brevior. *Valvæ* florigeræ tenuiter pubescentes, inferne purpureæ, superne albæ, 1½–2 lin. longæ, dentibus tenuibus; arista inferne scabra, tenuis, 3–4 lin. longa, erecta; valvæ superiores vacuæ, glabræ (aristis demptis) ab inferioribus superatæ. *Antheræ* ignotæ. Stigmata aurantiaca.

South Africa: Transvaal, near Rhenoster Poort, *Nelson*, 32.*

The spikelets resemble those of the Australian genus *Eetrosia*, which has, however, a very different panicle and comparatively shorter glumes.—O. Stapf.

Fig. 1, a ligule; 2, a spikelet; 3, lower glume; 4, upper glume; 5, a spikelet with the glumes removed; 6, a fertile valve; 7, its pale; 8, terminal tuft of barren valves; 9, a lodicule. *All enlarged.*

11.
10
6
4
1
3
2

Plate 2612.

TRIPHLEBIA ALOPECUROIDES, *Stapf.*

Gramineæ. Tribe Festuceæ.

Triphlebia, *Stapf, in Thiselton-Dyer, Fl. Cap.* vii. p. 318. *Spiculæ* 4–5-floræ, lateraliter compressæ, subsessiles vel breviter pedicellatæ, in paniculas spiciformes dispositæ ; rhachilla supra glumas et inter valvas articulata. *Glumæ* subæquales, membranaceæ, lanceolatæ, caudato-acuminatæ, 1 nerves. *Valvæ* glumas paulo superantes, iis persimiles, 3-nerves ; summa sterilis, redacta. *Paleæ* valvis paulo breviores, 2-carinatæ. *Lodiculæ* 2, minutæ, hyalinæ, cuneatæ. *Stamina* 3. *Ovarium* glabrum ; styli breves ; stigmata laxe plumosa, lateraliter exserta. *Caryopsis* valva paleaque vix mutata amplexa, oblonga, teres ; embryo brevis ; hilum punctiforme, basale.—Gramen *perenne, cæspitosum.* Foliorum *laminæ angustæ, plerumque setaceæ, longæ ; ligulæ ad marginem ciliatum redactæ.* Paniculæ *cylindricæ, densæ, plerumque atropurpureæ, griseo-pilosæ.*

T. alopecuroides, *Stapf* (*sp. unica*). *Culmi* erecti, $\frac{1}{3}$–$1\frac{1}{2}$ ped. alti, glabri, læves, simplices vel ima basi compressi. *Folia* omnia basi congesta, undique pilis tenuibus patulis laxe conspersa vel rarius glabra ; vaginæ firmiusculæ, persistentes ; laminæ filiformes vel setaceæ, raro planæ, acutissimæ, 3 ad 12 poll. vel ultra longæ, rigidulæ. *Panicula* $\frac{3}{4}$–3 poll. longa, interdum basi interrupta, ramis appressis fere a basi vel a basi ramulosis. *Spiculæ* coarctatæ, 2 lin. longæ, glumis valvis paleis æqualiter pilis griseis sæpe tuberculis minutis insidentibus conspersis. *Glumæ* $1\frac{1}{2}$ lin. longæ, subulato-acuminatæ. *Valvæ* glumis paululo breviores, sæpe mucronulatæ. *Paleæ* 1 lin. longæ. *Antheræ* $\frac{2}{3}$ lin. longæ. *Caryopsis* circiter $\frac{5}{8}$–1 lin. longa, brunnea.—*Lasiochloa alopecuroides*, Hack. in Bull. Herb. Boiss. iii. p. 393. *Kœleria Gerrardi*, Munro et Benth. in Benth. & Hook. Gen. Pl. iii. p. 1184 (nomen tantum).

South Africa. Transvaal : Houtbosch Berg, *Nelson*, 82* ; Steelpoort River, *Nelson*, 12* ; Spitzkop Goldmine, *Wilms*, 1697 ; Lymklip Spruit, *Nelson*, 52*. Orange Free State : *Cooper*, 723, 3352. Pondoland : *Sutherland*. Griqualand East : grassy places on the summit of Malowe Mountain, 6,000 feet, *Tyson*, 1217, 2773 ; summit of Currie Mountain near Kokstad, 7,500 feet, *Tyson*, 1311. Natal : Kar Kloof, *Rehmann*, 7361 ; Noodsberg, *Wood*, 884 ; from Umpumulo to Reit Vlei, *Buchanan*, 167 ; without precise locality, *Gerrard*, 474 ; *Buchanan*, 32.

Triphlebia differs considerably from *Lasiochloa* in the nervation and texture of the glumes and valves ; I can, however, for the present, not suggest a better place for it than near *Lasiochloa*. It resembles superficially *Kœleria* in habit and has, like *K. cristata*, 3-nerved valves ; but the shape and texture of the glumes and valves, and particularly the structure of the grain, are quite distinct.—O. STAPF.

Fig. 1, a ligule ; 2, a spikelet ; 3, lower glume ; 4, upper glume ; 5, a floret ; 6, a valve ; 7, a pale ; 8, a lodicule ; 9, an ovary ; 10, a grain (side view) ; 11, the same (front view). *All enlarged.*

Plate 2613.

ARUNDINARIA AURICOMA, *Mitford.*

Gramineæ. Tribe Bambuseæ.

A. auricoma, *Mitford, Bamb. Gard.* p. 100. *A. macrospermæ,* var. *suffruticosæ,* Munro, affinis, sed habitu, foliorum vaginis superne obscurius ciliatis, ore haud vel fugaciter fimbriatis, laminis subtus semper densius molliterque pubescentibus, glumis longioribus plerumque subfoliaceis distincta.

Fruticulus circiter 3-pedalis, præter basin parce ramosus. *Culmi* teretes, graciles, subfistulosi, infra nodos annulo glauco cereo induti et interdum præterea puberuli; internodia inferiora in culmis sterilibus 3–5 poll. longa, sæpe breviter exserta, superiora 3–4 brevia, vaginis arcte imbricatis tecta, in floriferis ut in illis sed internodiis 2–4 elongatis hornotinis additis. *Foliorum* vaginæ arctæ, striatæ, ad nodos pilosulæ, secundum margines superne tenuiter vel obscure ciliatæ, ore nudæ vel parce atque fugaciter fimbriatæ, superiores sæpe superne pubescentes, subcompressæ, purpurascentes; ligulæ brevissimæ, truncatæ; laminæ breviter petiolatæ, lineari-lanceolatæ, setaceo-acuminatæ, basi rotundatæ, 5–7 poll. longæ, 9–12 lin. latæ, virides vel plus minusve aureo-vittatæ, supra parce pilosulæ imprimis secundum costam, infra molliter pubescentes, nervis secundariis utrinque 5–6 venis transversis tenuibus sed distinctis, areolis subelongatis. *Spicula* terminalis plerumque solitaria (raro secunda paulo infra addita) linearis, laxe 5–10-flora, 1½–2½ poll. longa; rhachilla pubescens articulis superne clavatis. *Gluma* spicularum terminalium solitaria subfoliacea, lanceolata, caudato-acuminata, spiculæ dimidium æquans vel longior, superne puberula, gluma spicularum lateralium 2, oblongæ, mucronato-acuminatæ, superne pubescentes, inferior 5-, superior 7-nervis, illa 5½, hæc 7½ lin. longa. *Valvæ* ovatæ, inferiores caudato-acuminatæ, superiores acutæ et plus minusve mucronatæ, intermediæ 7–8 lin. longæ, superne puberulæ, marginibus ciliolatæ, herbaceæ, interdum purpurascentes 9-nerves, plus minusve tesselatæ. *Palæa* lineari-oblongæ, 2-cuspidatæ, carinis dense ciliatis, inferiores quam valvæ breviores, superiores eas æquantes vel subsuperantes. *Lodiculæ* ciliatæ. *Antheræ* 5 lin. longæ. *Stylus* stigmata 3 æquans.—*Bambusa Fortunei* **var.** ***aurea*,** **Hort.**

Native country unknown. Drawn from specimens cultivated at Kew.

This species has been in cultivation for some time. It was referred to *Arundinaria Fortunei*, Riv. Bamb. p. 314 (*Bambusa variegata*, Standish in Proc. Hort. Soc. 1861, p. 614 ; Sieb. et Miq. Ann. Mus. Bot. ii. p. 285 ; Franch. & Sav. Fl. Jap. ii. p. 183 ; *B. Fortunei* foliis niveo-vittatis, Van Houtte, Fl. des Serres, xv. p. 69, t. 1535 ; *A. picta*, Sieb. et Zucc. ex Munro in Trans. Linn. Soc. xxvi. p. 111), a species only known in the barren state, and distinguished by the more graceful and dwarf habit and smaller and less hairy leaves. Some specimens of this come, however, so near to *A. auricoma* that the discrimination becomes uncertain, in any case, so far as their specific distinction is concerned ; but as *A. Fortunei* is so imperfectly known, this question must remain in abeyance. The affinity of *A. auricoma* lies evidently with the North American *A. macrosperma*, Mich., and more especially with the smaller variety, described by Munro as var. *suffruticosa* and identical with *A. tecta*, Mühl. The empty bract preceding the lowest flower-bearing bract or valve is described above as glume, but it may be equivalent to the bract which, in the two instances where I have observed an additional lateral spikelet, supported the latter. The glumes of these lateral spikelets are well differentiated, which is the rule in *A. macrosperma*.—O. Stapf.

Fig. 1, junction of sheath and blade with ligule ; 2, under side of a part of a leaf ; 3, glume of a solitary terminal spikelet ; 4, a floret ; 5, a rhachilla joint ; 6, a valve ; 7, a pale from the back ; 8, a flap of a pale ; 9, an anterior lodicule ; 10, a posterior lodicule ; 11, an anther ; 12, a pistil. *All enlarged.*

5.
4
7
1
2
3
6
M.S. del. et lith.
C. Kapf imal

Plate 2614.

PHYLLOSTACHYS HENONIS, *Mitford.*

Gramineæ. Tribe Bambuseæ.

P. Henonis, *Mitford, Bamb. Gard.* p. 149 ; affinis *P. Stauntonii*, Munro, sed paniculis magis decompositis et contractis, valvis brevioribus latioribus firmioribus distincta.

Frutex 8–14 ped. altus, ramosissimus, eleganter nutans. *Culmi* teretes, basi ad 1½ poll. crassi, fistulosi, uno latere late sulcati, glabri, infra nodos parce albo-cerei, cæterum virides, deinde lutescentes, nodis supra vaginarum delapsarum cicatrices annuliformes annulatim prominentibus distinctis ; internodia inferiora 5–6 poll. longa, superiora breviora ; rami plerumque ternati, inæquales, longiores ad 20 poll. longi, vel ut superiores geminati vel summi solitarii, graciles vel gracillimi. *Folia imperfecta* innovationum ad vaginas 2–4 poll. longas latiusculas mox emarcidas et deciduas dense striatas laminas subuliformes tenues breves gerentes redacta. *Folia perfecta* 2–3 ad ramulorum apices ; vaginæ arctæ, tenuiter striatæ, 1–1½ poll. longæ, glabræ, ore fusco fimbriatæ ; ligulæ truncatæ, breves, ciliolatæ ; laminæ lanceolatæ, vel lineari-lanceolatæ, acuminatæ, basi in petiolum gracilem 1–2 lin. longum attenuatæ, 2–3½ poll. longæ, 4–6 lin. latæ, supra læte virides, glabræ, infra pallidiores, basi minute parceque puberulæ, cæterum glabræ, margine exteriore rigide ciliolatæ, altero sublævi, rarius utroque lævi vel ciliolato, nervis secundariis utrinque 4–5, supra indistinctis, reticulatione distincta areolis minimis. *Paniculæ* in culmis subefoliatis laterales, 7–10 poll. longæ, potius densæ, a basi divisæ, interdum apice foliosæ ; rami primarii geminati, inæquales, plus minusve compressi vel obtuse angulati internodiis intermediis longioribus 2½ poll. longis ; rami secundarii inferiores 1½–3 poll. vel ultra longi, a basi vel ex nodis superioribus plerumque fasciculatim ramulosi vel spiculigeri ; ramuli basi squamis parvis sursum in bracteas lanceolatas vel lineari-oblongas sæpe laminas minutas gerentes subpersistentes abeuntibus muniti. *Spiculæ* ellipticæ vel elliptico-oblongæ, circiter 8–9 lin. longæ, 2–4-floræ. *Rhachis* plerumque solitaria, bracteæ præcedenti conformis vel inter eam et valvas intermedia. *Valvæ* lanceolatæ, inferiores caudato-acuminatæ, superiores æquantes vel excedentes, herbaceæ, dense pubescentes (præsertim superne), obscure 9-nerves. *Palea* valvis breviores, bicuspidatæ, pubescentes. *Lodiculæ* hyalinæ, ciliolatæ. *Antheræ* 3–4 lin. longæ. *Ovarium* substipitatum ;

stylus $2\frac{1}{2}$ lin. longus: stigmata tenuiter plumosa, paulo ultra 1-lin. longa.—*P. Henonis*, Bean in Gard. Chron. 1894, March, p. 238 (in enumer. nomen tantum); *Bambusa Henonis*, Hort. ex Bean, l.c.

NATIVE COUNTRY probably Japan. Drawn from flowering specimens grown in Lord Moreton's garden at Sarsden, Chipping Norton and a barren branch grown at Kew.

This bamboo was introduced from Japan, where it is called Hachiku, and has for some time been known to gardeners as *Bambusa Henonis*. It comes very near to *P. Stauntonii*, Munro, a Chinese species, and I thought for some time that it might be identical with it, but the more complete specimens in R. Brown's collection at the British Museum have since convinced me of the two plants being decidedly distinct.—O. STAPF.

Fig. 1, junction of sheath and blade with ligule; 2, a spikelet with a subfoliaceous glume; 3, this glume, seen from the front; 4, a spikelet with a non-foliaceous glume; 5, this glume, seen from the front; 6, spikelet with the glumes removed; 7, a valve; 8, a pale; 9, an anterior lodicule; 10, a posterior lodicule; 11, pistil and filaments. *All enlarged.*

M.S. del. et lith.

Plate 2615.

POLAKIA PARADOXA, *Stapf.*

LABIATÆ. Tribe, MONARDEÆ.

P. paradoxa, *Stapf in Denkschr. Akad. Wiss. Wien, Math.-Naturw. Cl.*, i. p. 43 ; **unica generis species.**

Herba perennis radice crassa. *Caulis* simplex vel ima basi parce divisus, parte subterranea ½–1 poll. longa, crassa, foliorum basium residuis obtecta, coma foliorum verticillarium coronata quorum e conde caulis floriferus surgit ; hic crassus, ad paniculæ basin circiter semipedalis, obtuse angulatus, albidus vel purpurascens, tomentellus vel demum superne glabrescens. *Folia* ima circa caulis floriferi basin verticillatim congesta numerosa, cætera in 2–3 verticillis 5- vel 4-meris, sursum decrescentia et brevius petiolata vel summa sessilia, cinereo-tomentella et præterea hinc inde pilis longis patulis conspersa, ambitu oblongo-lanceolata, pinnatisecta, majora ad 3 (cum petiolo ad 5) poll. longa, segmentis linearibus, lanceolatis vel ovato-lanceolatis, forma et magnitudine valde variis, plus minusve profunde dentatis ; folia floralia lineari-lanceolata vel linearia, integra vel inferiora utrinque laciniis nonnullis aucta, acuta, mucronata. *Panicula* rigide-patula, ½–1 ped. longa et lata, ramis in verticillis 4–3-meris distantibus ; axis inferne subglabra, superne patule villosa, crassa ; rami virgati, inferiores semipedales, simplices vel interdum parce ramosi, plus minusve patule villosi, apicem versus sæpe steriles, cæterum cymas oppositas plerumque ad florem solitarium redactas et bracteis linearibus vel subulato-lanceolatis mucronatis suffultas gerentes ; pedicelli stricti, tenues, patule villosi, ½–¾ poll. longi. *Flores* heteromorphi. *Forma androdynamica : Calyx* obconico-campanulatus, circiter 9 lin. longus (dentibus inclusis), fere ad medium in labia æquilonga fissus, dentibus labii superi lateralibus e basi lanceolata longe subulatim attenuatis, summo multo breviore e basi lata acuminato, dentibus labii inferi ad basin fissi, lanceolato-subulatis, totus longe et patule glanduloso-pilosus, fructifer auctus, ampliatus. *Corolla* albida : tubus subrectus, sensim in faucem ampliatus, circiter 10 lin. longus, intus nudus ; labium superum 3–4 lin. longum, bilobum, lobis planis, inferum æquilongum, trilobum, lobis lateralibus late ovatis, porrectis, medio majore emarginato, convexulo. *Stamina* subinclusa, antica filamentis glabris, loculis ob connectivum 2–2½ lin. longum remotis, postica suppressa (0). *Stylus* labium superum subæquans. *Forma gynodynamica : Calyx*

latius campanulatus cum dentium aristis 6–7 lin. longus, dentibus latioribus aristato-mucronatis. *Corollæ* tubus 6–7 lin. longus, intus supra medium annulo pilosulo munitus, labia 2½–3 lin. longa lobis subæqualibus. *Stamina* antica loculis ob connectivum brevissimum admodum approximatis, postica filamentis perbrevibus antheris rudimentariis. *Nuculæ* tantum 2 maturantes, stipite crasso brevissimo areola minima insidentes, a dorso compressæ, obovoideæ, 3 lin. longæ, alutaceo brunneæ, humefactæ valde mucilaginosæ. *Polakia paradoxa*, Stapf ex Briq. in Engl. & Prantl, Natürl. Pflanzenf. iv. 3. A. p. 287. *Salvia aristata*, Auch. ex Benth. in DC. Prodr. xii. p. 270 : Bunge, Labiat. Pers. (in Mém. Acad. Pétersb. sér. 7. t. xxi. no. 1), p 41 ; Boiss. Fl. Or. iv. p. 617 ; Briq. l. c. p. 275. *S. Owerini*, Trautv. in Act. Hort. Petrop. ii. p. 479. *S. anisodonta*, Hausskn. & Briq. in Engl. & Prantl, Natürl. Pflanzenf. iv. 3. A. p. 286.

Orient : Persia, near Urmiah, *Owerin* ; between Zenjan and Sultanieh, *Bunge* ; Hamadan, *Polak & Pichler* ; Irak, at Girdu and Mowdere near Sultanabad, *Strauss* ; without precise locality, *Aucher*, 1563. Assyria, Mendeli, *Noë*.

A very peculiar plant, the position of which has always been doubtful. Bentham, in describing it from very incomplete material, put it into *Salvia*, but was uncertain whether it should go into the section *Eusphace* or in the section *Æthiopis*. Bunge referred it also to *Salvia*, but based on it a new section *Physosphace*. Trautvetter, who saw only the top of a panicle, described it as a new species of *Salvia*, adding "habitu peculiari a Salviis nostratibus omnibus longe recedentibus et procul dubio generis sectionem propriam exhibentis." Boissier has it in the section *Æthiopis* ; Briquet in the section *Gongrosphace* of *Salvia* under two names, and besides as a distinct, although provisional, genus (*Polakia*), the position of which, he says, cannot be cleared up before the subgenera *Viasala*, *Allagospadonopsis* and *Corolu* have been revised. When I described it as *Polakia* in 1885, I did not know Aucher's *S. aristata*, of which I saw a fruiting panicle at Kew several years later. The material at Kew is hardly sufficient to decide the question as to the true affinity of the plant, which, in any case, would have to occupy a separate place, even if it should be, as is very likely, reduced to *Salvia*. The specimen drawn represents the gynodynamic state and has been figured from a plant collected by Mr. Th. Strauss near Sultanabad.—O. Stapf.

Fig. 1, calyx, cut open, and pistil : 2, corolla, cut open ; 3, an anticous stamen ; 4, a mature nutlet ; 5, cross section of the same.

1.

2.

M S. del. et lith.

Plate 2616.

GIULIANETTIA TENUIS, *Rolfe.*

Orchideæ.

Giulianettia, *Rolfe* (*gen. nov.*). *Sepala* patentia, subæqualia, lateralia basi supra insertionem oblique extensa, post labelli calcar in laminam liberam breviter bilobam connata. *Petala* sepalis angustiora. *Labellum* basi columnæ affixum et cum ea in tubum brevem connatum ; lamina erecta, integra, late cordato-ovata, concava, brevissima, medio crassiuscula, basi longe calcarata *Columna* brevissima, crassa ; clinandrium cavum, amplum, crenulatum. *Anthera* terminalis, opercularis, incumbens, convexa, 2-locularis ; pollinia (?). Herba *epiphytica, humilis.* Caules *graciles, ramosi, vaginis scariosis striatis verrucosis obtecti, paucifoliati.* Folia *subteretia.* Flores *terminales, solitarii, e medio bracteārum imbricatarum paleaceo-scariosarum horizontale ad apices ramorum enascentes.*

G. tenuis, *Rolfe* (*sp. unica*).

Caules breves, parce ramosi, foliorum vaginis striatis verrucosis obtecti, 3 4 poll. longi. *Folia* linearia, subobtusa, subteretia, 6 10 lin. longa ; vaginis striatis verrucosis. *Flores* solitarii, horizontales. *Bracteæ* spathaceo-oblongæ, subacutæ, involutæ, striatæ, 6 lin. longæ. *Pedicelli* 5 lin. longi. *Sepala* lineari-lanceolata, acuta, 6 lin. longa, lamina $1\frac{1}{2}$ lin. longa et lata. *Petala* linearia, acuta, 5 lin. longa. *Labellum* late cordato-ovatum, subobtusum, $1\frac{1}{2}$ lin. longum, concavum ; calcar cylindricum, obtusum, $4\frac{1}{2}$ 5 lin. longum. *Columna* crassa, 1 lin. longa.

New Guinea : Mount Scratchley, 12,200 ft., *Giulianetti.*

A very interesting monotype, clearly allied to *Ceratostylis*, but differing in its large solitary flowers, in the auriculate bases of the lateral sepals united into a limb behind the spur of the lip, and in the long spur, which is about three times as long as the limb. The pollinia were missing from the flower examined.—R. Allen Rolfe.

Fig. 1, a flower ; 2, lip and column. *All enlarged.*

M. S. del. et lith.

Plate 2617.

CATASETUM LABIATUM, *Rodr.*

Orchideæ.

C. labiatum, *Rodr. Gen. et Sp. Orch. nov.* ii. p. 218 ; a *C. globiflorum*, Hook., labello longiore recedit.

Pseudobulbi fusiformi-oblongi, 2¼–3 poll. longi, 4–5-phylli. *Folia* oblongo-lanceolata, acuta, plicata, 7–11 poll. longa, 1½-2 poll. lata. *Scapus masculus* arcuatus, 1½ ped. altus, circa 10-florus. *Bracteæ* oblongæ, subobtusæ, 5 8 lin. longæ. *Pedicelli* 1¼ poll. longi. *Flores* subglobosi. *Sepala* et *petala* incurvo-conniventia, concava, late elliptico-oblonga, subobtusa, concava, 8 9 lin. longa. *Labellum* anticum, carnosum, cochleato concavum, 1 poll. longum, ¾ poll. latum, obscure trilobum ; lobi laterales in dentem parvum producti ; intermedius triangulo-oblongus, subobtusus, basi subtumidus. *Columna* clavata, 7 lin longa, rostrata ; antennæ incurvæ, subdivergentes. *Anthera* et *pollinia* perfecta. *Stigma* abortivum *Scapus femineus* erectus, 1½ ped. altus, circiter 2 florus. *Bracteæ* oblongæ, subobtusæ, 5 6 lin. longæ. *Pedicelli* 1¼ poll. longi. *Sepala* et *petala* patentia, elliptico-oblonga, subobtusa, 7 9 lin. longa. *Labellum* posticum, carnosum, galeatum, 9 10 lin. longum, 8 9 lin. latum, margine et apice reflexum. *Columna* crassa, brevis, ecirrhosa. *Anthera* abortiva. *Stigma* cavum.

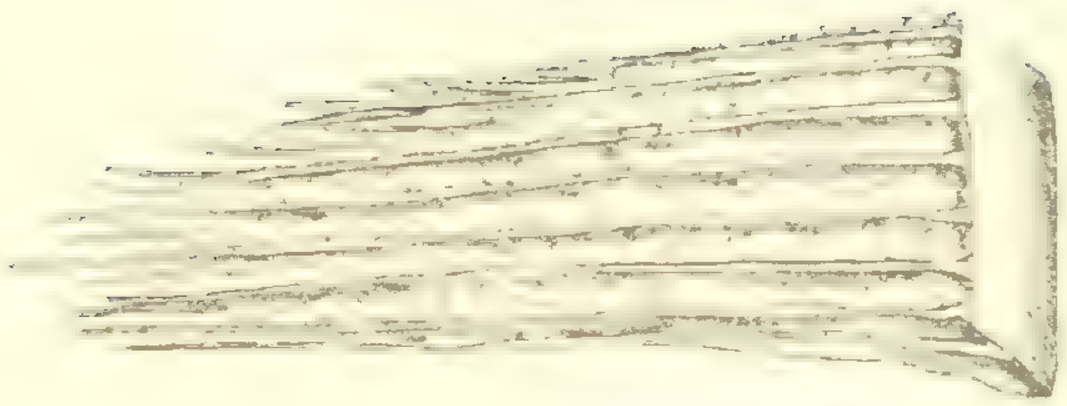
Brazil : Organ Mountains, *Barbosa Rodrigues.* Figured from a plant grown in the Royal Gardens, Kew.

The male of this species was described by Barbosa Rodrigues in 1881, since which time nothing further seems to have been known about it until last autumn. In September a *Catasetum* which had been purchased at a sale produced a scape of female flowers, which, as often happens with this genus, could not be determined. A second scape soon followed from the opposite side of the same bulb, and when the flowers opened, in December, they proved to be males belonging to the above-named species. It is an ally of *C. luridum*, Lindl., and *C. Hookeri*, Lindl., but differs in the details of the lip. The flowers are green, except that in the males the lip is dull yellow internally. A dried male flower and sketch of a plant which flowered in the collection in April 1861 are preserved in the Herbarium, and clearly belong to this species, for they agree in structure and colour, but there is no note as to the origin of the plant. The present species is the

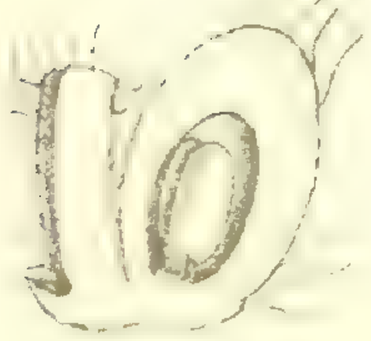
twenty-third of which the female flowers have been recorded, but there is a greater number of which this sex is still unknown.—R. ALLEN ROLFE.

Fig. 1, pl nt, showing male and female scapes (the latter after the flowers had fallen); 2, leaf; 3, male scape; 4, male flower, with the sepals and petals laid open; 5, male column, with antennæ (side view); 6, the same, with part of the antennæ removed (front view); 7, pollinia; 8, female flower. 1, *reduced;* 2, 3, 4, *and* 8 *natural size;* 5, 6, *and 7 enlarged.*

6.

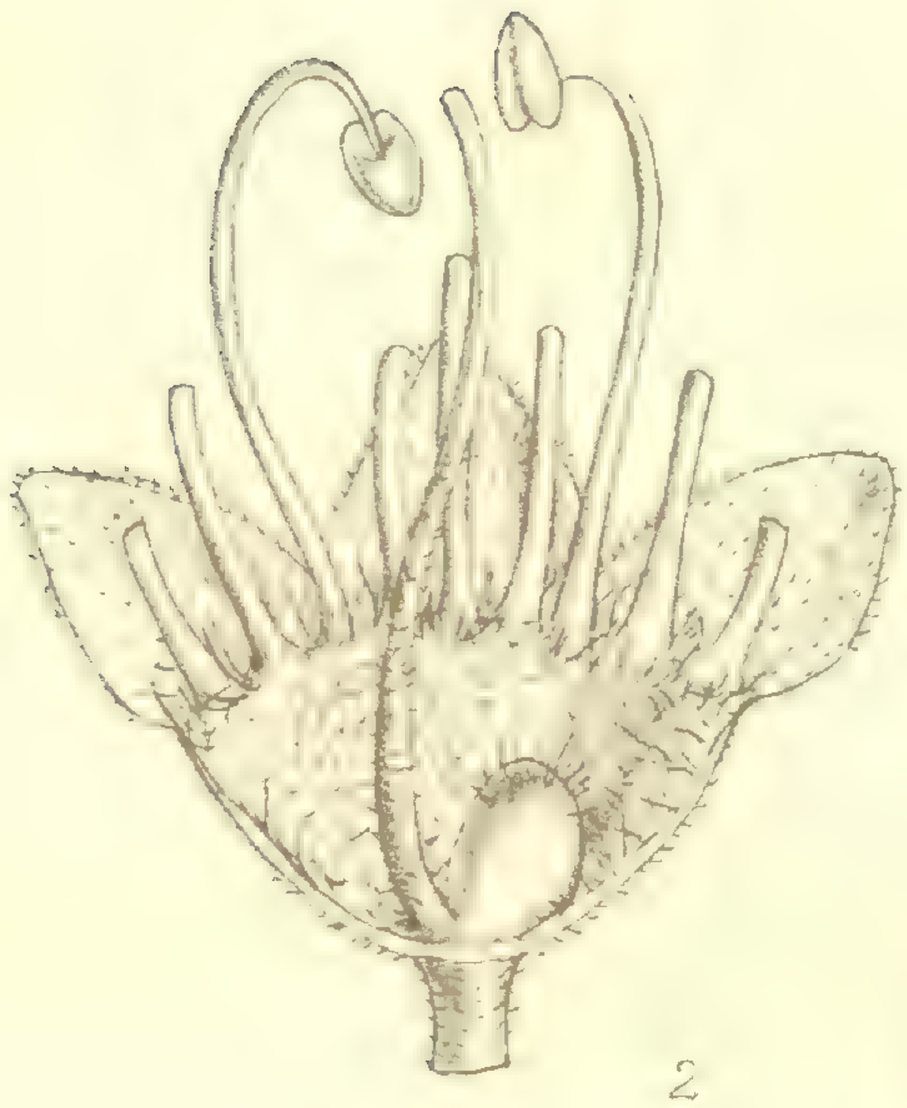


7

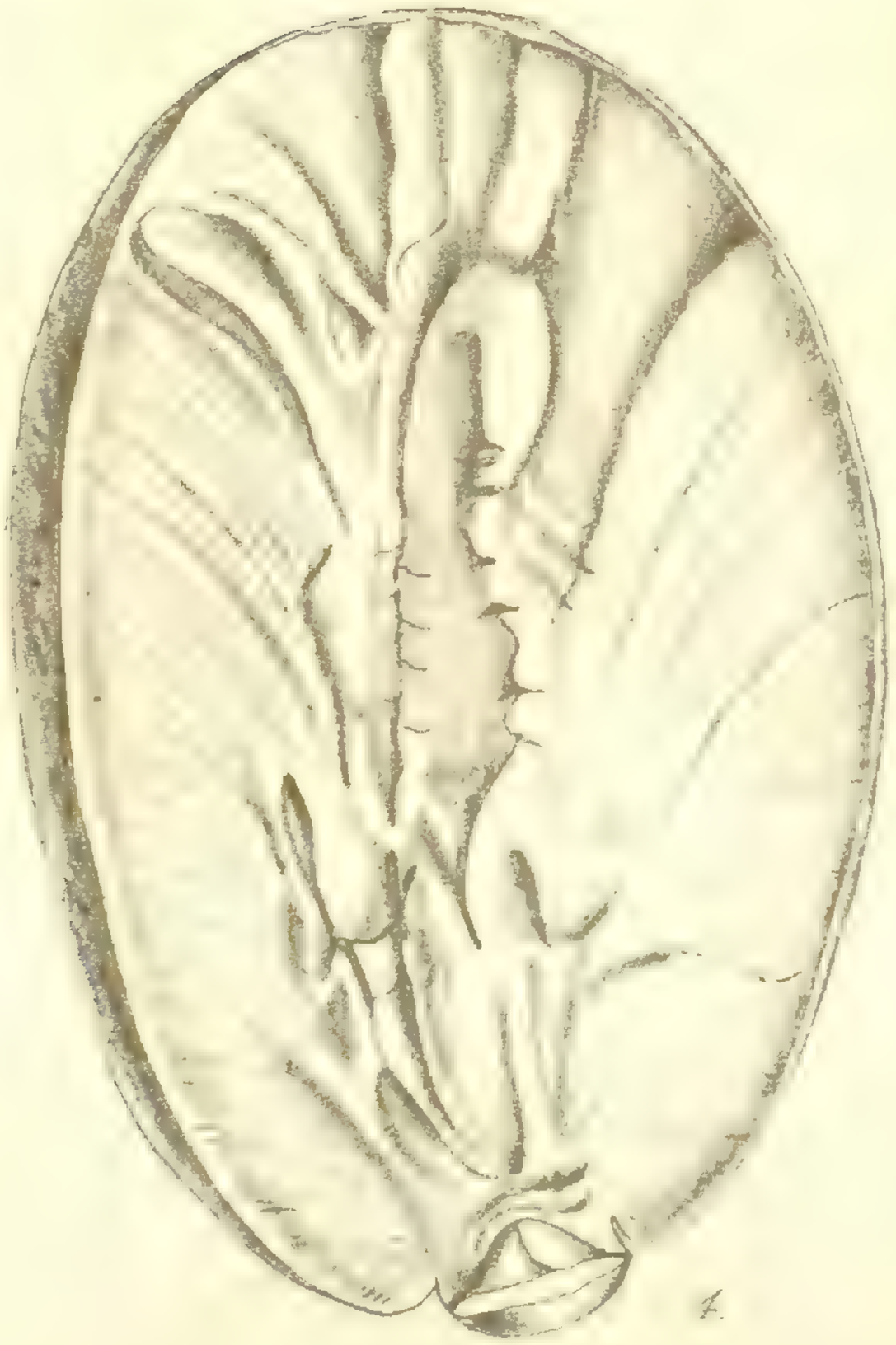


9

5.



2



4.

1.

M S. del. et lith

M. S. del. et lith.

Plates 2618 and 2619.

MOQUILEA PLATYPUS, *Hemsl.*

Rosaceæ. Tribe Chrysobalaneæ.

M. platypus, *Hemsl., Diag. Pl. Nov. Mex.* pars 1, p. 9, *et Biol. Centr. Am. Bot.* i. p. 366 ; ab omnibus speciebus hucusque descriptis inflorescentiæ ramulis crassis compressis et magnitudine fructus recedit.

Arbor usque ad 150 ped. alta, ramulis floriferis crassiusculis primum puberulis. *Folia* distincte petiolata, crassa, coriacea, glaberrima, oblonga vel anguste lanceolata, 6–10-pollicaria, acuta vel subobtusa, basi rotundata vel cuneata, supra nitida, venis primariis lateralibus numerosis leviter curvatis ; petiolus crassus, 6–7 lin. longus. *Flores* racemoso-paniculati, 3–4 lin. diametro, distincte pedicellati, solitarii vel fasciculati ; paniculæ terminales, 9–12 poll. longæ (forsan interdum multo majores), ramulis crassis compressis primum puberulis. *Calyx* dense cano-tomentosus, lobis late ovatis obtusis demum reflexis, tubo intus villoso. *Petala* elliptica, ciliata, quam lobi calycini longiora, caducissima. *Stamina* sæpius 15, subæqualia, filamentis basi villosis. *Ovarium* atque stylus infra medium plus minusve villosum. *Fructus* pro genere maximus, drupaceus, compresso-ellipsoideus, leviter obliquus, 6–7 poll. longus, 4–5 poll. diametro, grosse irregulariterque tuberculatus vel verrucosus, sæpius unispermus, mesocarpio fibroso, endocarpio tenui. *Semen* ellipsoideum vel oblongo-ovoideum, circiter 3 poll. longum, cotyledonibus magnis valde fibrosis, plumula cum radicula parva.

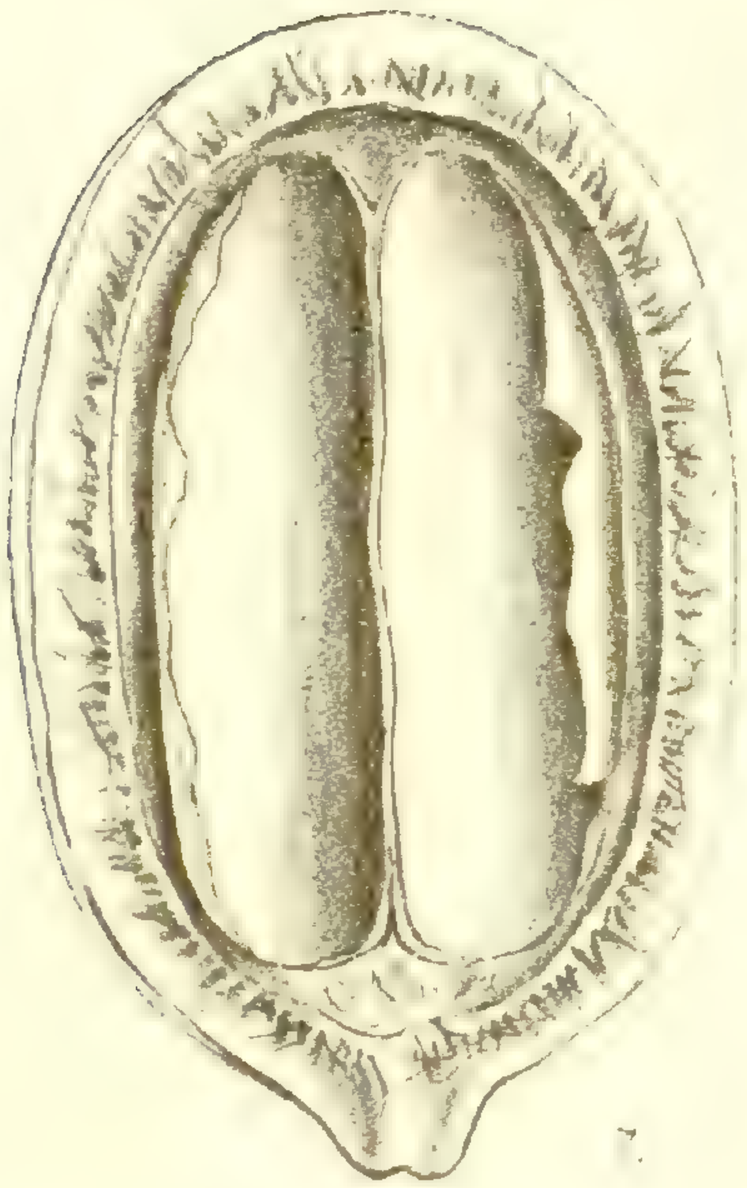
Central America : Panama (?) *Cuming*, 1272 ; neighbourhood of Granada, Nicaragua, cultivated, *Levy*, 222 ; Botanical Station, British Honduras, *Campbell*.

Kew is indebted to Mr. E. J. F. Campbell, Curator of the Botanic Garden, British Honduras, for a number of fruits of this remarkable species of *Moquilea*, with the information that it bears the local name of 'monkey apple,' and that it is edible. The fruit is an uncouth-looking object, and by no means suggests an apple. Mr. Campbell describes the tree as thirty to forty feet high ; Mr. Levy as 50 metres. It does not appear certain that any of the specimens are from wild trees.—W. Botting Hemsley.

Plate 2618. Fig. 1, a flower, from which the petals have fallen ; 2, longitudinal section of the same in an earlier stage ; 3, section of ovary ; 4, embryo, with one cotyledon removed ; 5, basal part of embryo, showing radicle ; 6, axis of the embryo ; 7, fibrous tissue of cotyledon. *Figs. 4 and 5 natural size ; all the rest enlarged.*

Plate 2619. Flowering branch and fruit, *natural size*.

M.S. del. et lith

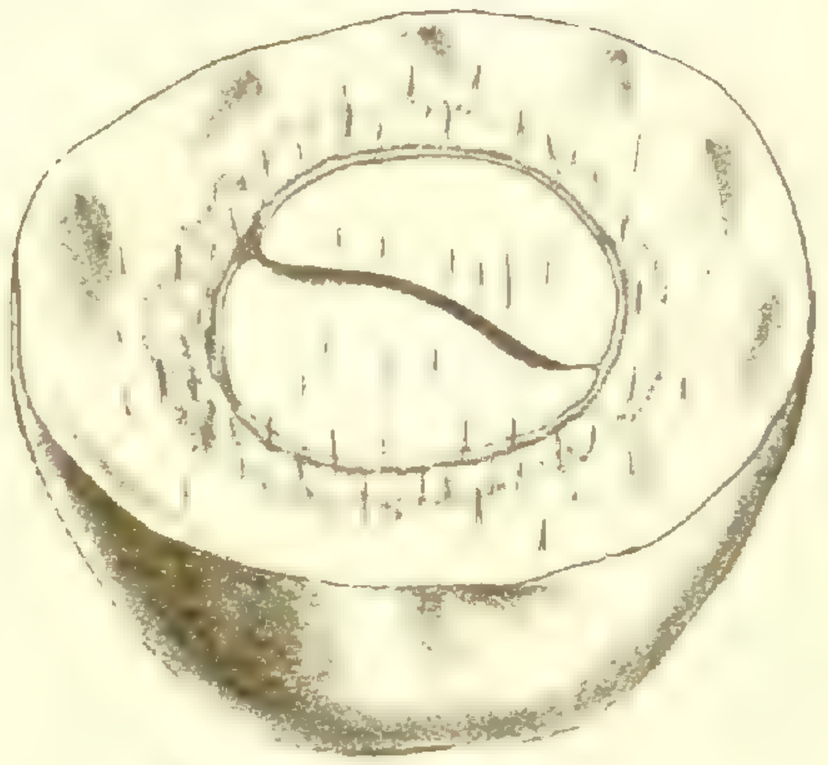


7.

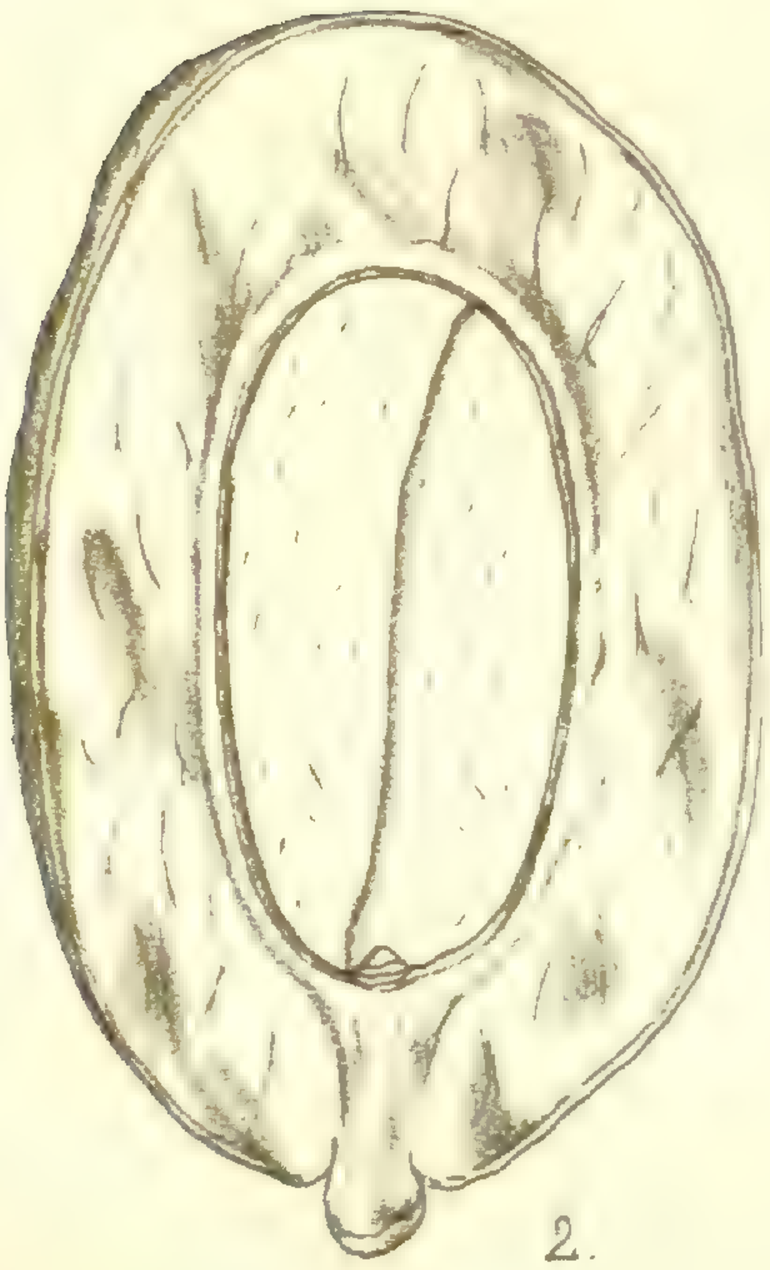
5.

4.

6.



3.



2.

1

M.S.delet.lith.

Plates 2620 and 2621.

COUEPIA DODECANDRA, *Hemsl.*

Rosaceæ. Tribe Chrysobalaneæ.

C. dodecandra, *Hemsl.* ; Hirtella dodecandra, DC. *Prodr.* ii. p. 529 ; *Calq. des Dess. Fl. Mex.* 302 ; species ex affinitate *C. Uiti*, Benth. brasiliensis, sed foliis majoribus subtus argenteis.

Arbor 15–20-pedalis (Campbell), ramulis floriferis crassiusculis rigidis glabrescentibus. *Folia* breviter petiolata, crasse coriacea, rigida, oblonga vel oblongo-lanceolata, sæpius 2–4 poll., interdum usque ad 6 poll. longa, utrinque plus minusve rotundata, supra glabra vel cito glabrescentia, subtus brevissime cano- vel argenteo tomentosa, venis primariis lateralibus utrinque circiter 10–12 subtus prominentibus ; petiolus crassus, 1½–3 lin. longus. *Flores* pro genere mediocres, corymboso paniculati, brevissime pedicellati ; paniculæ terminales, angustæ, densæ, folia vix excedentes. *Calyx* cano- vel furfuraceo-tomentosus, lobis obovato-rotundatis. *Petala* oblonga, ciliolata. *Stamina* 10–15, in orbem completum disposita. *Ovarium* hirsutum, 1-loculare, 2-ovulatum. *Fructus* drupaceus, ellipsoideus, 2–2½ poll. longus, 1–2-spermus, mesocarpio carnoso, endocarpio tenui ; seminis cotyledonibus inæqualibus, radicula parva, testa demum libera in fructu persistenti.

British Honduras : Botanical Station, *Campbell* ; Mexico : Tabasco, cultivated, *Rovirosa*, 179.

It is uncertain where this tree is really wild. Under the original description, cited above, Mexico is given as the native country, without any localisation. In 1889 Kew received a set of Rovirosa's Mexican plants, including a specimen of *C. dodecandra*, with the note : "Cultivado en todas las quintas de S. Juan Bautista, Tabasco." In 1898 Mr. E. J. F. Campbell sent flowering and fruiting specimens to Kew from British Honduras, under the name of "baboon cap." He also describes the fruit as edible ; but he does not state whether his specimens were taken from a wild or a cultivated tree.

The two-seeded fruits of this species present a curious and misleading appearance in section, as the embryos are free from the outer

testa, so that the fruit might easily be passed as two celled.—W. Botting Hemsley.

Plate 2620: fig. 1, a flower; 2, a petal; 3, longitudinal section of ovary and calyx; 4, cross section. *All enlarged.*

Plate 2621: fig. 1, a fruit; 2, longitudinal section of the same: 3, cross section of a fruit containing one seed; 4, an embryo; 5, axis of embryo with part of one cotyledon; 6, cross section of a fruit containing two seeds; 7, longitudinal section of a fruit containing the corresponding portions of the testa of two seeds. *All except fig. 5 natural size.*

M. C. del. et lith.

O Stapf anal.

Plate 2622.

ACTINOSTEMMA BIGLANDULOSUM, *Hemsl.*

Cucurbitaceæ.

A. biglandulosum, *Hemsl.* (*sp. nov.*) ; species foliorum lobis 2 basilaribus conspicue 1-glandulosis facile distinguitur.

Herba gracillima, alte scandens, fere undique glaberrima, ramulis floriferis elongatis fere filiformibus. *Folia* longe petiolata, subcarnosa, lævia, cordato-rotundata, absque petiolo 2–3 poll. longa lataque, apice plus minusve trilobata, cetera integra, basi sæpius auriculato bilobata, interdum rotundato lobata, lobis glandula parva clavata instructis ; petiolus tenuis, 1½–2 poll. longus. *Cirrhi* capillares, simplices vel furcati. *Flores masculini*, 6–8 lin. diametro, in paniculas laxas, axillares, quam folia longiores dispositi. *Calycis* et *corollæ* segmenta similia, lineari lanceolata, acutissima patentia. *Stamina* 5 quam corolla breviora, quorum 4 filamentis crassiusculis per paria cohærentia, quintum liberum ; antheræ biloculares, loculis discretis, connectivo incrassato, supra loculos in caudam tenuem elongato. *Flores feminei* ignoti, sed manifeste axillares, solitarii, breviter pedunculati, pedunculis 3–6 lin. longis. *Fructus* capsularis, prope apicem circumscisse dehiscens, demum siccus, cylindraceus, 1½–1¾ poll. longus et 6–9 lin. latus, aculeis numerosis 2–3 lin. longis erecto-patentibus armatus ; calyptra appendice axili deorsum usque ad capsulæ basin producta munita ; semina circiter 4–6, compressa, margine irregulariter lobulata, apice alata, cum ala circiter 10 lin. longa.

China : in woods Mengtze plain, Yunnan, *Hancock*, 346 ; *A. Henry*, 9390, and 9390, A. and B. The flowering branch was drawn from a plant raised in the Royal Gardens, Kew, from seed sent by Dr. A. Henry ; the fruit and seed from his dried specimens.

A. biglandulosum presents several peculiarities that require further elucidation. The glands on the basal lobes of the leaves are very marked, and the terminal filiform appendage of the connective is unusual. Further, the nature of the downward (?) axile prolongation of the calyptra has not been ascertained. Only quite ripe fruits are present, so that neither the attachment of the seeds nor the connection of this central axis could be traced with certainty.—W. Botting Hemsley.

Fig. 1, male flowers ; 2, androecium ; 3, dorsal view of anther ; 4, a fruit ; 5, calyptra of the same ; 6, a seed ; 7, an embryo. 1–3 *enlarged* ; 4–7 *natural size*.

M S. del. et lith.

O. Stapf anal.

Plate 2623.

PASSIFLORA HENRYI, *Hemsl.*

Passifloraceæ.

P. (§ **Decaloba-Polyanthea**) **Henryi**, *Hemsl.* (*sp. nov.*) ; inter species chinenses *P. cupuliformi*, Mast. (hujus operis t. 1768) magis quam aliis accedit, recedit foliis minoribus basi rotundatis, floribus majoribus in **axillis foliorum fasciculatis, nec cymosis.**

Frutex vel herba scandens, fere omnino glabra, ramis floriferis elongatis gracilibus sulcatis. *Folia* longe graciliterque petiolata, papyracea vel fere membranacea, circumscriptione valde variabilia, sæpius semiorbicularia, apice truncata vel obscure trilobata, lobis apiculatis, nunc vere orbicularia, nunc rotundata, apice acuminata, in ramis floriferis 1–2 poll., in ramis fructiferis usque ad 5 poll. lata ; petiolus 1–2½ poll. longus, apicem versus biglandulosus. *Cirrhi* simplices, graciles. *Flores* **albo-virescentes vel flavescentes, circiter 1 poll.** diametro, in axillis foliorum 2–5, fasciculati, pedicellis filiformibus 6–12 lin. longis, primum puberulis, paullo infra flores articulatis : bracteæ ac bracteolæ minutæ, filiformes. *Sepala* et *petala* subæqualia, lineari-oblonga, obtusa. *Corona* faucialis duplex, filamentis exterioribus filiformibus quam petalis tertia parte brevioribus, interioribus brevioribus anguste clavatis ; corona interior erecta, plicata. *Ovarium* globosum, pubescens vel puberulum, gynophoro brevi. *Bacca* globosa, circiter ½ poll. diametro.

China : plain of Mengtze, Yunnan, at 4,500 feet, *A. Henry*, 10,282.

This makes the third described species of *Passiflora* known to inhabit China, and there are fruiting specimens of a fourth very distinct species in Dr. A. Henry's collection from the same region as the above.* *P. Henryi*, Hemsl., is also near *P. Leschenaultii*, DC., a native of the Pulney and Nilghirri mountains, having much larger solitary flowers. It is doubtful whether any of the Khasia specimens referred to the latter are really the same species.—W. Botting Hemsley.

***Passiflora** (§ **Decaloba-Polyanthea**) **franchetiana.** *Hemsl.* (*sp. nov.*) : ab omnibus speciebus sinensibus differt foliis subcoriaceis alte bilobatis reticulato-venosis, petiolo infra medium biglanduloso.

Frutex vel herba alte scandens, ut videtur undique glabra vel glabrescens, ramulis fructiferis crassiusculis subteretibus. *Folia* iis

Bauhiniæ specierum quarundam similia, longe petiolata, demum leviter coriacea, e basi rotundata vel subcordata sursum latiora, absque petiolo 3–4 lin. longa, ab apice fere ad medium bilobata, lobis ovato-oblongis apice rotundatis divaricatis sinu aperto, vel interdum erectis sinu angusto, a basi subquinquenervia, venis conspicue reticulatis ; petiolus gracilis, $1\frac{1}{2}$–2 poll. longus, paullo supra basin biglandulosus. *Cirrhi* in specimine kewensi desunt. *Flores* in axillis foliorum 2–6, fasciculati, pedicellis rigidiusculis puberulis circiter semipollicaribus ; bracteæ minutæ, lineares, cito deciduæ. *Calyx* . . . *Fructus* globosus, siccitate 6–9 lin. diametro, gynophoro circiter 2 lin. longo ; semina numerosa, nigra, compresso-ovoidea, scrobiculata, arillo aliformi cincta, absque arillo circiter $1\frac{1}{2}$ lin. longa.

China : in woods Mengtze, Yunnan, at 5,500 feet, *A. Henry*, 11,192.

Fig. 1, section of flower showing corona ; 2, a filament of the outer series of the corona ; 3, a filament of the intermediate series ; 4, a portion of the inner plicate series ; 5, androecium and gynæceum. *All enlarged.*

1.

2.

3.

M.S. del et lith

O. Stapf anal.

PLATE 2624.

SHORTIA SINENSIS, *Hemsl.*

DIAPENSIACEÆ.

S. sinensis, *Hemsl. (sp. nov.)*; a speciebus hactenus cognitis foliis oblongo-lanceolatis deorsum gradatim attenuatis differt.

Herba perennis, subacaulis, undique glabra, caudice incrassata. *Folia* hiemalia squamiformia, superiora gradatim majora, foliis æstivalibus similia. Folia propria æstivalia demum coriacea, ovali-oblonga, longe petiolata, absque petiolo usque ad 5 poll. longa et $2\frac{1}{2}$ poll. lata, obtusa, basi cuneata, subtus pallidiora, præcipue supra medium grosse crenatodentata, crenis calloso-apiculatis; petiolus anguste alatus, laminam æquans. *Pedunculi* graciles, uniflori, præter bracteas calyci contiguas nudi, quam folia sæpius dimidio breviores. *Flores* nutantes, circiter 1 poll. diametro. *Calyx* alte 5-partitus vel sepala subæqualia, fere libera, ovata, vix acuta, rigida, scariosa, longitudinaliter striata, diu persistentia, juxta basin bracteis (vel bracteolis) nonnullis similibus sed angustioribus acute acuminatis fulta. *Corolla* regularis, lobis rotundatis obtuse dentatis. *Stamina* breviter exserta, filamentis filiformibus nudis; staminodia minuta, angustissima, squamiformia, infra stamina inserta et cum iis alternantia. *Ovarium* glabrum, triloculare, multiovulatum, stylo stamina æquante.

CHINA: south-eastern mountains at 5,000 feet, Mengtze, Yunnan. *A. Henry*, 11,490.

The genus *Shortia* was founded by Torrey and Gray, in 1842, for a plant inhabiting the mountains of North and South Carolina. Later, a second species was discovered in Japan, and more recently another has been found in Tibet, which, with the present very distinct one, brings the total up to four. It is doubtful whether, in view of these later discoveries which exhibit some deviations from the genus as originally described, Siebold and Zuccarini's *Schizocodon* (1843) should not be regarded as a section of *Shortia*.—W. BOTTING HEMSLEY.

Fig. 1, pistil and part of calyx; 2. a corolla laid open: 3. a cross section of an ovary. *All enlarged.*

M. S. del. et lith.

O. Stapf anal.

Plate 2625.

LESPEDEZA DIVERSIFOLIA. *Hemsl.*

Leguminosæ. Suborder Papilionaceæ.

L. diversifolia, *Hemsl.* (*sp. nov.*); inter species chinenses foliis dimorphis insignis.

Frutex 6-pedalis, præter flores glabrescens, ramis elongatis gracillimis primum minute strigillosis. *Folia* conferta, trifoliolata, dimorpha, papyracea, primum subtus obscure strigillosa, inferiora distincte graciliterque petiolata, cum petiolo 1½-2 poll. longa, foliolis petiolulatis lanceolatis vel oblanceolatis apiculatis, apiculo cito deciduo; folia superiora sessilia vel subsessilia, foliolis brevissime petiolulatis late cordato-reniformibus latioribus quam longis abrupte acuminatis; stipulæ minutissimæ. *Flores* purpurei, circiter semi-pollicares, racemosi, pedicellis filiformibus vix longioribus: racemi breves, densi, 1½–2 poll. longi, in axillis foliorum superiorum et terminales, bracteis minutis caducis. *Calyx* ferrugineo-sericeo-hirsutus, dentibus subæqualibus acutis, 2 superioribus fere omnino connatis. *Petala* inæqualia, alis quam cæteris brevioribus. *Stamen* vexillare liberum. *Ovarium* breviter stipitatum, hirsutum, 1-ovulatum. *Legumen* maturum ignotum.

China: in the southern mountains at 6,000 feet, Mengtze, Yunnan, ***A. Henry*, 9243.**

This very distinct species of *Lespedeza* is one of three different species (belonging, perhaps, to as many different genera) of Leguminosæ in Dr. A. Henry's Mengtze collection, exhibiting the same kind of dimorphism in the leaves. One or both of the others will be figured in a future part of the *Icones*.—W. Botting Hemsley.

Fig. 1, a flower from which the petals have been removed; 2, a wing-petal; 3, a keel-petal; 4, section of pistil showing the solitary ovule. *All enlarged.*

The impression of the 'Icones' is limited to 250 copies, ***and the work will not be reprinted.***

A small number of copies of the Third Series, comprising 1,000 plates, is offered for sale at £5 each.

Application should be made to Messrs. DULAU *& Co.,* 37 *Soho Square.*

VOL. VII.—PART II.] [MAY.

HOOKER'S

ICONES PLANTARUM;

OR,

FIGURES, WITH DESCRIPTIVE CHARACTERS AND REMARKS,

OF NEW AND RARE PLANTS,

SELECTED FROM THE

KEW HERBARIUM.

FOURTH SERIES.

EDITED FOR THE BENTHAM TRUSTEES BY

SIR WILLIAM T. THISELTON-DYER,

K.C.M.G., C.I.E., LL.D., M.A., F.R.S.

HONORARY STUDENT OF CHRIST CHURCH, OXFORD.

DIRECTOR, ROYAL BOTANIC GARDENS, KEW.

VOL. VII.

OR VOL. XXVII. OF THE ENTIRE WORK.

DULAU & CO.

37 SOHO SQUARE, LONDON.

1900.

SPOTTISWOODE AND CO. PRINTERS, NEW-STREET SQUARE, LONDON.

Price Four Shillings.

7.
5
4.
3.
1.
2
6

Plate 2626.

SHUTERIA SINENSIS, *Hemsl.*

Leguminosæ. Suborder Papilionaceæ.

S. sinensis, *Hemsl.* (*sp. nov.*) ; species *S. suffulta*, Benth., simillima sed robustior, omnibus partibus majoribus, calycis dentibus haud acuminatis.

Herba glabrescens, scandens, caulibus ramulisque teretibus gracillimis. *Folia* trifoliolata, longe graciliterque petiolata, vel in ramis floriferis subsessilia : foliola petiolulata vel subsessilia, membranacea, circumscriptione valde variabilia, elliptica, ovalia, orbicularia, vel foliorum superiorum minorum reniformia vel orbiculari-cordata, amplexicaulia, maxima bipollicaria, cito glabrescentia, integerrima ; petioli filiformes, longiores bipollicares ; stipulæ conspicuæ, scariosæ, cordato-ovatæ, acutæ, sæpius circiter semipollicares, striatæ ; stipellæ bracteolæque stipulis similes sed multo minores. *Flores* circiter 5 lin. longi, purpurei (*Henry*), numerosi, racemosi, brevissime pedicellati, racemis gracilibus ramulos laterales terminantibus. *Calyx* tubulosus, primo pilis paucis vestitus, dentibus deltoideis vix acutis. *Petala* subæqualia, vexillo unguiculato elliptico emarginato paullo longiore. *Ovarium* sessile, glabrum. *Legumen* lineare, fere rectum, circiter 2 poll. longum, compressum, glabrum ; semina circiter 8, matura non visa.

China : Mengtze, Yunnan, at 5,000 ft., *A. Henry*, 5216.

Dr. Henry describes this as shrubby, but this means only that the stems become hard and wire-like.—W. Botting Hemsley.

Fig. 1, a stipule ; 2, flower from which the petals have been removed and calyx laid open ; 3, standard ; 4, a wing-petal ; 5, a keel-petal ; 6, ovary in section ; 7, a pod. *All except 7 enlarged.*

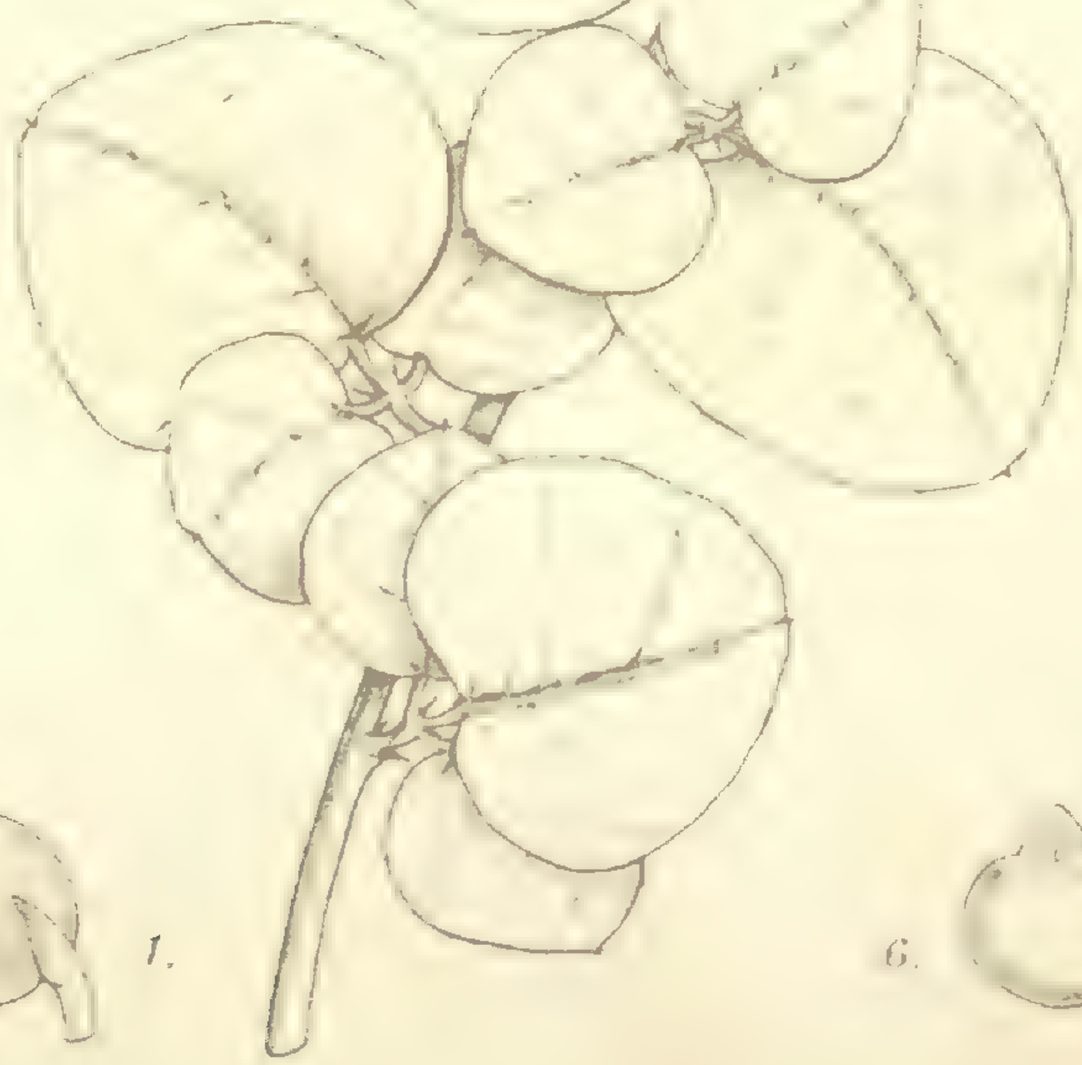
5.

4.

3.

2

1.



6.

Plate 2627.

DUMASIA CORDIFOLIA, *Benth.*

Leguminosæ. Suborder Papilionaceæ.

D. cordifolia, *Benth. in Hook. f. Fl. Brit. Ind.* ii. p. 183 ; foliolis glabris rotundato-cordatis vel reniformibus.

Herba gracillima, glabra, volubilis. *Folia* trifoliolata, brevissime petiolata : foliola brevissime petiolulata, membranacea, $\frac{1}{2}$–1 poll. diametro, stipulis stipellisque minutis. *Flores* flavi, parvi, in racemos parvos axillares dispositi, breviter pedicellati. *Calyx* tubulosus, oblique truncatus. *Petala* longe unguiculata, vexillo basi biauriculato. *Ovarium* glabrum, circiter 6-ovulatum, stylo supra medium incrassato. *Legumen* leviter falcatum, circiter pollicare ; semina rotundata, compressa, vix 1 lin. diametro.

China : Mountains south-east of Mengtze, Yunnan, at 5,000 feet, *A. Henry*, 10326.

This is also a native of Khasia and Manipur, and is figured here because there is no really good and easily accessible representation of the genus. The thickening of the style above the middle is characteristic.—W. Botting Hemsley.

Fig. 1, a flower from which the petals have been removed ; 2, standard ; 3, a keel-petal ; 4, a wing-petal ; 5, an ovary in longitudinal section ; 6, a seed. *All enlarged.*

PLATE 2628.

SLOANEA HONGKONGENSIS, *Hemsl.*

TILIACEÆ.

S. hongkongensis, *Hemsl.* (*sp. nov.*); foliis graciliter petiolatis integris, fructu aculeis longis undique instructo.

Arbor circiter 15 pedalis (*Ford*), præter flores glabra, ramulis floriferis rectis rigidis. *Folia* ad apices ramulorum conferta, longe petiolata, vix coriacea, lanceolata vel oblanceolata, absque petiolo 2–4 poll. longa, integra, acuminata sed vix acuta, basi subcuneata, venis primariis utrinque 5–7 tenuibus inter se arcuatim anastomosantibus; petioli usque ad 1½ poll. longi, apice leviter incrassati. *Flores* nutantes, 6–8 lin. diametro, in axillis foliorum 7–9 superiorum solitarii vel in corymbos subterminales dispositi; pedunculi 9–12 lin. longi, fructiferi elongati. *Sepala* crassa, sericea, late oblonga vel ovalia, apice integra vel paucidentata. *Petala* glabra, quam sepala paullo longiora, multifida vel grosse fimbriata. *Stamina* numerosissima, petalis paullo longiora, filamentis brevissimis, antheris apiculatis. *Ovarium* 5–6-loculare, setulosum, stylo stamina superante. *Capsula* cum aculeis circiter 6 lin. longis saltem 2½–3 poll. diametro, 5–6-locularis, valvis post dehiscentiam divaricatis diu persistentibus; semina in quoque loculo sæpius 4–5, arillo carnoso aurantiaco usque ad medium vestita.

HONGKONG: Happy Valley and Aberdeen New Road, *W. J. Tutcher*, Herb. Hongkong, 611 (1895), and *C. Ford*, 1898, without number.

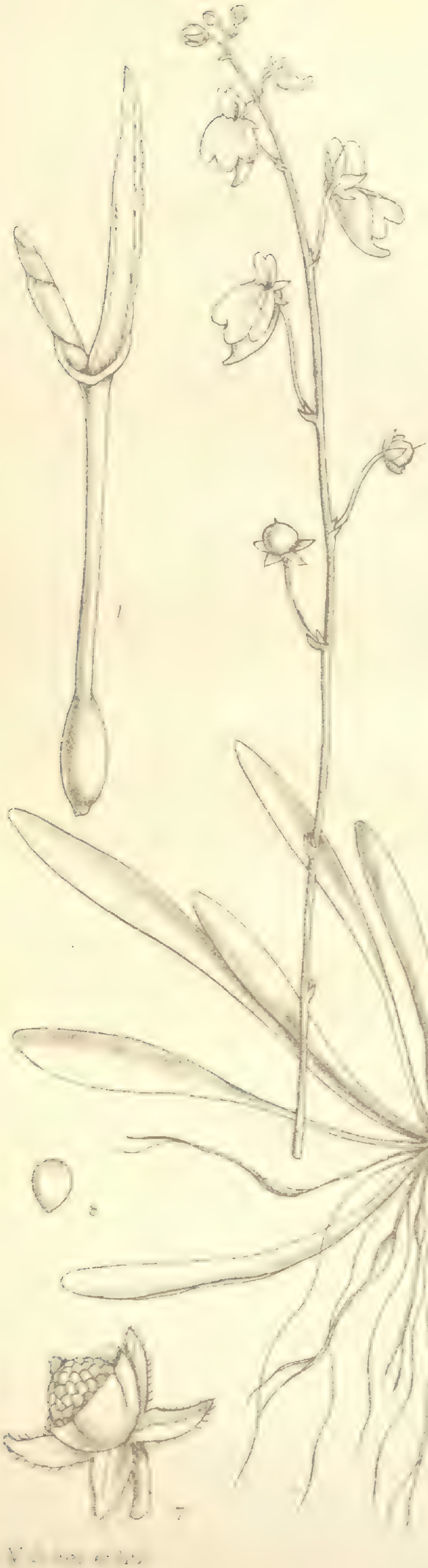
Kew is indebted to Mr. C. Ford, Superintendent of the Hongkong Botanic Garden, for the excellent and copious specimens from which the accompanying plate was prepared.

With regard to the generic name adopted, I have followed the late Sir Ferdinand von Mueller and other botanists in regarding *Echinocarpus* of the Old World as not being generically distinct from the American *Sloanea*. The distinctive characters of these genera, as well as those of Miquel's *Phæniosperma*, are untenable. The last was supposed to differ from the others in having arillate seeds; a character common to the present plant, to some, at least, of the Indian species of *Echinocarpus*, as well to the American *Sloanea Massoni*, Sw., and probably to other species, the seeds of which are unknown. The genus *Sloanea* as originally limited was apetalous, but *S. jamaicensis*,

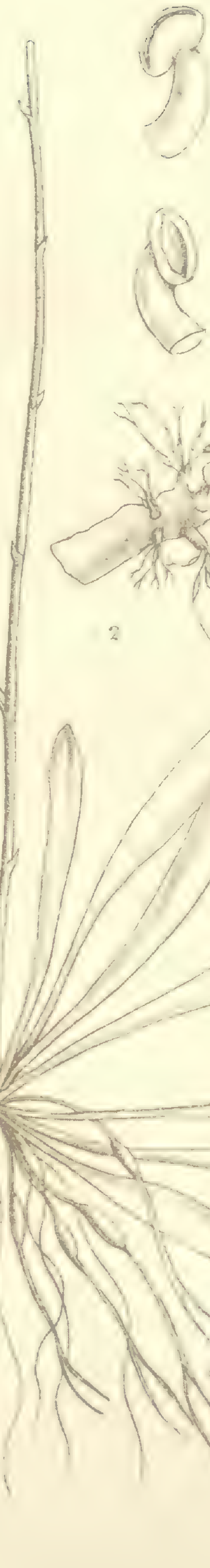
Hook (*Ic. Pl.* tt. 194–196) has distinct petals; therefore the geographical separation of *Sloanea* and *Echinocarpus* fails in two of the principal characters. K. Schumann (Engler and Prantl, *Natürl. Pflanzenf.* iii. 6, p. 5) divides *Sloanea* into three sections, namely: *Eusloanea*, apetalous; *Echinocarpus*, petaliferous; and *Phanicospermum*, having arillate seeds. The two last should be united under the former name.

The other Chinese species of *Sloanea* are: *S. sinensis*, Hemsl. (*Echinocarpus*, Hance); *S. hanceana*, Hemsl. (*E. sinensis*, Hemsl. non Hance); *S. dasycarpa*, Hemsl. (*E. dasycarpus*, Benth.). The last is another species having arillate seeds, and it is probable that they all have.—W. Botting Hemsley.

Fig. 1, a petal; 2, gynæceum and one stamen on the receptacle; 3, back view of a stamen; 4, vertical section of ovary; 5, cross section of ovary; 6, arillate seed; 7, the same in section showing the embryo; 8, another section showing the edges of the cotyledons; 9, a cross section of the same. *All enlarged.*


1

4


6

1

2

3

5

7

8

Plate 2629.

GENLISEA GUIANENSIS, *N. E. Brown.*

Lentibulariaceæ.

G. guianensis, *N. E. Brown* (*sp. nov.*) ; affinis *G. africanæ*, Oliv., sed foliis lanceolatis et floribus majoribus differt.

Folia $1\frac{3}{4}$-$2\frac{1}{4}$ poll. longa, $1\frac{1}{4}$ 3 lin. lata, anguste lanceolata, obtusa, basi attenuata, membranacea, flaccida, glabra. *Utriculi* descendentes, breviter vel longissime stipitati ; tubus 9-10 lin. longus, basi ovoideo-inflatus ; lobi spiraliter torti $4\frac{1}{2}$-7 lin. longi. *Scapus* 4-12 poll. longus, $\frac{1}{2}$-$\frac{3}{4}$ lin. crassus, plurisquamosus ; flores 3–10, racemosi. *Squamæ* et *bracteæ* basifixæ, $\frac{2}{3}$-$\frac{3}{4}$ lin. longæ, ovatæ, acutæ, minute ciliolatæ. *Pedicelli* 3-8 lin. longi, basi bibracteolati, apice subtus tenuiter et minute hirtelli. Bracteolæ $\frac{1}{2}$-$\frac{2}{3}$ lin. longæ, lanceolatæ, acutæ, minute ciliolatæ. *Calyx* 5-partitus, minute hirtellus, lobis 1 lin. longis $\frac{1}{2}$ lin. latis, lanceolatis vel ovato lanceolatis acutis ciliatis. *Corolla* personata, violacea, 6 $6\frac{1}{2}$ lin. longa ; labium superius $2\frac{1}{4}$ lin. longum, erectum, ellipticum, obtusissimum, leviter emarginatum, margine reflexum ; labium inferius 3-$3\frac{1}{2}$ lin. longum, deflexum, calcari incumbens, trilobum, lobis oblongis obtusis, palato minute puberulo luteo ; calcar 5 lin. longum, crassum, conicum, obtusum, glabrum. *Capsula* 2 lin. diam., globosa, tenuiter minuteque pubescens, stylo brevissimo coronata.

British Guiana : Arabapu River, *Quelch & McConnell*, 150.

G. guianensis is one of the most distinct species of the genus, having larger leaves than any other at present described. In appearance it more nearly resembles *G. africana*, Oliv. (a native of Angola), than any other species known to me. The curious utricles, which are characteristic of the genus *Genlisea*, have a very remarkable structure, which has been well described and figured in Darwin's *Insectivorous Plants*, p. 446, and Goebel's *Pflanzenbiologische Schilderungen*, ii. p. 121, tt. 15-16. *G. guianensis* demonstrates that budding sometimes takes place at the tips of the leaves, as on one leaf a young plant had commenced to develop near the apex, and on another tufts of small utricles had formed, as shown in fig. 2.—N. E. Brown.

Fig. 1, a utricle with one of the terminal lobes flattened out ; 2, apex of a leaf with tufts of utricles growing from it ; 3, fragment of a scape with bract and two bracteoles ; 4, a flower ; 5, calyx and ovary ; 6, front and side view of a stamen ; 7, fruit, with the upper half of the capsule fallen away, displaying the seeds ; 8, seed. *All enlarged.*

2

3

4

5

1

PLATE 2630.

DOLICHOLOBIUM ACUMINATUM, *Burkill*.

RUBIACEÆ. Tribe CINCHONEÆ.

D. acuminatum, *Burkill* ; foliis late obovatis acuminatis distinctum.

Arbor 50–60 ped. alta. *Folia* late obovata, apice acuminata, basi obtusa vel rotundata, supra glabra, infra pilis fulvis hirsuta, 8–10 poll. longa, 4–6½ poll. lata ; petioli 1 poll. longi ; stipulæ magnæ, elliptico-ovatæ, apice rotundatæ, hirsutæ, 2 poll. longæ, 9 lin. latæ, caducæ. *Inflorescentia* 4–9-flora, ovariis pedicellos simulantibus umbelliformis ; pedunculus petiolo æquilongus, hirsutus. *Flores* albi, unisexuales ; flos terminalis femineus, maximus, sessilis ; alii masculi, minores, petalis sæpissime pauperiores, sed corollæ tubo longiores, pedicellati. *Calyx* infundibularis, brunneus et fere scariosus vel basi subherbacea viridis, margine leviter sinuatus vel dentibus obtusis ornatus, hirsutus ; calyx floris masculi ½ lin. longus ; floris feminei 2½–3 lin. longus. *Corollæ* tubus extus hirsutus, intus glaber, rectus ; tubus floris masculi bene evolutus ad 2⅓ poll. longus et 1 lin. latus, os versus ad antheras paullulo inflatus ; tubus floris feminei bene evolutus 1 poll. longus, tubo floris masculi paullo latior, æqualis ; lobi oblique elliptici, contorti, intus ad margines interiores extus ad margines exteriores puberuli, apice unilateraliter erosi ; lobi floris masculi 5 (vel 4), 9 lin. longi, 3 lin. lati ; lobi floris feminei 6 (vel 5), 11–12 lin. longi, 5 lin. lati. *Antheræ* sessiles, floris masculi iis floris feminei duplo majores, tot quot corollæ lobi. *Stylus* cum stigmatibus floris feminei corollæ tubum subæquans ; stigmata elongato-spathulata ; stylus stigmataque floris masculi multo minores. *Discus* elevatus. *Ovarium*, flore femineo maturo, 8–9 lin. longum, extus albido-hirsutum. *Fructum* maturum non vidi ; **semina immatura in alas typicas elongata.**

SOLOMON ISLANDS : Treasury island, along the banks of a stream, *Guppy*, 187 ; Faro island, at 1,600 ft., *Guppy*, 219 ; New Georgia ?, in a collection chiefly from this island, *Officers of H.M.S. 'Penguin.'*

It is named "Lowasi" by the natives ; and flowers in June and July.

Hitherto the genus *Dolicholobium* has been only known from Fiji. Asa Gray described two species, B. Seemann a third, and J. G. Baker two more. Imperfect material of a sixth Fijian species exists in the

Kew Herbarium. *D. acuminatum* extends the range and brings the number of known species up to seven.

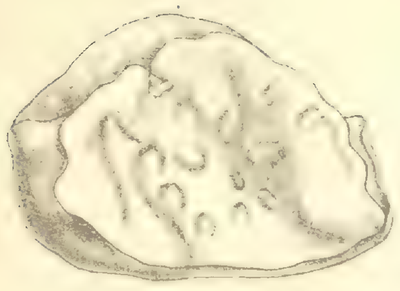
I have not been able to examine specimens of *D. latifolium*, A. Gray. The other six apparently exhibit the separation of the sexes in the manner described above, *i.e.*, the inflorescence ends in a female flower with more and larger petals than in the males, but with a shorter tube ; round it are the male flowers, sometimes as many as eight, more commonly about three, and rarely absent. This last-named condition occurs in the two specimens of *D. longissimum*, Seem., at Kew, and it is possible that the sexes may be more widely separated here.

In the male flower the inflated tube points to the presence of perfect anthers, the style and stigma are small, and the ovary, if present, is not to be distinguished from the pedicel. In the female flower, which opens in *D. acuminatum* before the males, the straight stoutish uniform tube attracts the eye, the style and stigma are large, and the ovary is obvious.

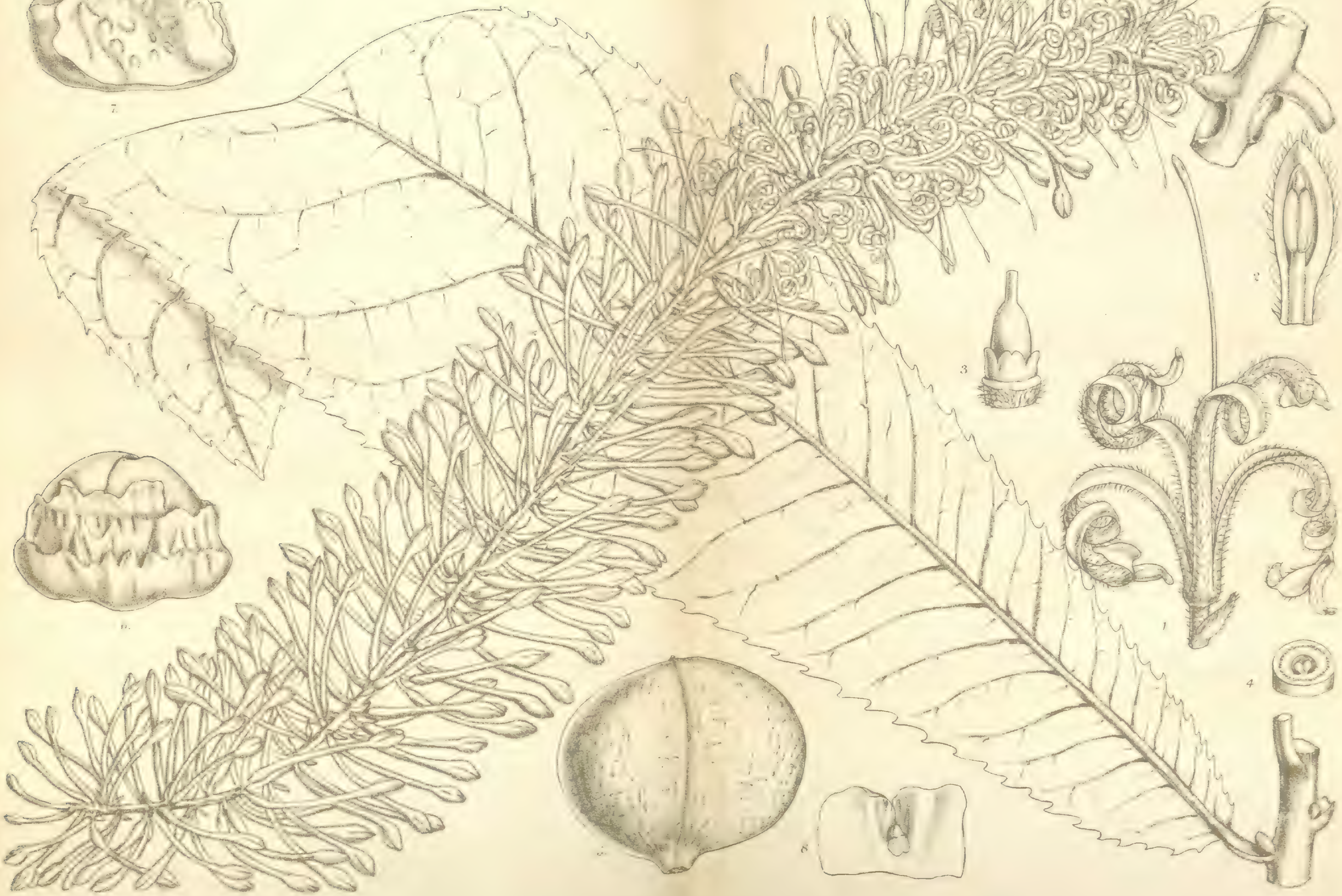
It is no surprise that this genus should prove to be diclinous ; for Burck has admirably demonstrated the abundance of such forms in the order to which it belongs (see Ann. du Jardin Bot. Buitenzorg, iv. p. 12). *Timonius Rumphii, DC*, whose floral mechanism he describes, is a comparable species. Its male flowers have a longer and narrower tube than the female and fewer corolla-lobes, and the stamens, as many as the corolla-lobes— 5 in the male, 10 in the female flower. Here, however, the plant is polygamodiœcious.

In some genera of Rubiaceæ, e.g. *Canthium*, Burck remarks that a complete series exists from full hermaphroditism of the flower to diœcism ; this is hardly the case in *Dolicholobium* ; and I believe that Asa Gray's character "flores . . . 4 meri" for *D. latifolium*, the species which I have not seen, really indicates that in his specimen the corolla of the female flower had fallen and that those remaining were 4-merous male flowers.—I. H. Burkill.

Fig. 1, ovary, style, and stigma of male flower ; 2. part of corolla of male flower laid open ; 3, ovary, style, and stigma of female flower ; 4, part of corolla of female flower, laid open; 5, seed (immature). *All enlarged.*



7.



11.

10.

3

2

4

8

Plate 2631.

HELICIA GRANDIS, *Hemsl.*

Proteaceæ.

H. grandis, *Hemsl.* (*sp. nov.*) ; ab omnibus speciebus sinensibus hactenus cognitis magnitudine omnium partium differt.

Arbor 10–15-pedalis (*A. Henry*), ramulis floriferis crassis rigidis indumento velutino ferrugineo vel atro-brunneo dense vestitis. *Folia* ampla, brevissime petiolata, ad apices ramulorum conferta, subcoriacea, oblanceolata, maxima sesquipedalia, et 7 poll. lata, serrulata, subacuminata, basi rotundata vel cuneata, præcipue subtus secus costam nervosque ferrugineo-pubescentia, demum glabrescentia, costa crassa utrinque elevata, venis primariis lateralibus numerosis, utrinque sed præcipue subtus conspicuis. *Flores* brunnei, staminibus cæruleis (*A. Henry*), extus ferrugineo-tomentosi, ante anthesin graciles, circiter pollicares, racemosi, racemis ex axillis foliorum delapsorum arcte deflexis, pedicellis brevissimis subfasciculatis. *Perianthii segmenta* linearia, revoluta, torta. *Ovarium* glabrum, stylo elongato capillari diu persistente, stigmate parvo clavato. *Capsula* glabra, lignosa, tarde dehiscens, subglobosa vel lateraliter compressa, usque 2 poll. diametro, sæpius unisperma. *Semen* erectum ; testa supra medium membranacea decidua vel deliquescens, infra medium crassa, incrassata, dura, cotyledonibus crassis carnosis inæqualibus.

China : mountains to the south-west of Mengtze, in forests at 5,000 feet, *A. Henry*, 10704.

This is a very handsome species, having ample foliage clothed with a rich brown tomentum, and brown flowers with blue stamens, according to Dr. Henry. The very long racemes are remarkably deflexed, judging from the dried specimens. A singular testa is developed by the seeds of this tree. In the upper part of the large ripe seeds it is merely a thin pellicle which early disappears, whereas in the lower part it consists of two or more irregular woody or almost bony layers.—W. Botting Hemsley.

Fig. 1, a flower ; 2, upper part of a perianth-lobe and a stamen ; 3, disk and pistil, upper part of the style removed ; 4, cross section of an ovary ; 5, fruit ; 6, a seed from which the membranous testa in the upper part has disappeared ; 7, inner face of one of the cotyledons showing the minute radicle at the top ; 8, portion of cotyledon and radicle. *All except 5 and 6 enlarged.*

Pl 2632

Plate 2632.

LONICERA CALCARATA, *Hemsl.*

Caprifoliaceæ.

L. (§ **Xylosteum**) **calcarata,** *Hemsl.* (*sp. nov.*) ; ab omnibus speciebus hucusque cognitis longitudine calcaris insignite differt.

Frutex alte scandens, omnino glaberrimus, ramulis floriferis elongatis rectis teretibus fistulosis ad nodos septatis, cortice pallide brunneo. *Folia* breviter petiolata, subcoriacea, ovata, elliptica, vel lanceolata, 3–6 poll. longa et 1–3 poll. lata, acute acuminata, basi rotundata, rarius cuneata, integra, venis primariis paucis subtus sat conspicua. *Flores* geminati, rubro-lutei, bene evoluti circiter 2 poll. diametro, involucrati ; pedunculi recti, $\frac{3}{4}$–$1\frac{1}{2}$ poll. longi ; involucri bracteæ 2, foliaceæ, sessiles, ovato-lanceolatæ, maximæ $1\frac{1}{4}$ poll. longæ sed sæpius minores, subacutæ, diu persistentes. *Calycis limbus* brevissimus, annularis. *Corollæ tubus* latus, brevis, antice in calcar semipollicare curvatum productus ; limbus alte bilabiatus, labio inferiore loriformi revoluto, superiore erecto lato breviter 4-lobulato, lobulis obtusis vel rotundatis. *Stamina* labium superius vix excedentia, filamentis filiformibus infra medium puberulis. *Ovarium* 5-loculare, loculis multiovulatis, stylo puberulo. *Baccæ* geminatæ, subcarnosæ, omnino confluentes, involucri bracteis et bracteolis binis brevibus rotundatis bracteis alternantibus suffultæ ; semina elliptica vel ovata, valde compressa, margine elevato.

China : Szechuen, without special locality, *A. Henry.* 8937 ; chiefly near Tachienlu, at 9,000 to 15,000 ft., *A. E. Pratt* ; Yunnan, rocky mountains near Mengtze, at 5,000 ft., *A. Henry.* 10721, 10721 A, 10721 B.

This is an exceedingly ornamental and at the same time a most interesting species of the genus *Lonicera*, which finds its greatest concentration in Western China, where there are probably not less than fifty or sixty species. *L. calcarata* is remarkable in having the hollow stems and 5 celled ovary of *Leycesteria*, associated with a long-spurred corolla, which is represented only by a more or less pronounced gibbosity in other species. – W. Botting Hemsley.

Fig. 1, anther and part of filament ; 2, stigma and part of style ; 3, a twin-ovary : 4, cross section of the same ; 5, a twin-fruit ; 6, a seed ; 7, section of the same showing the embryo. *All except 5 enlarged.*

1.
5.
2
6.
3

PLATE 2633.

LEYCESTERIA SINENSIS, *Hemsl.*

CAPRIFOLIACEÆ.

L. sinensis, *Hemsl.* (*sp. nov.*) ; a speciebus hactenus cognitis floribus ad apices ramulorum capitatis differt.

Frutex fere glaber, paucipedalis, ramis fistulosis ad nodos septatis. *Folia* breviter petiolata, membranacea, lanceolata vel ovato-lanceolata, cum petiolo 1½–3 poll. longa, longe acuteque acuminata, basi rotundata, supra parce strigillosa, subtus glauca, præcipue in venis rufis parce strigillosa, margine obscure sinuato-lobulata ac ciliolata, venis primariis utrinque circiter 5. *Flores* albi, 8–10 lin. longi, sessiles, in capitula parva ramulos breves laterales terminantia dispositi, pedunculis brevissimis ; capitula 5–6-flora, bracteis 5–6 foliaceis rotundato-ovatis vel lanceolatis quam floribus brevioribus suffulta, bracteolis inter flores minoribus. *Calycis limbus* brevis, cupularis, inæqualiter 5-dentatus vel 5-lobatus, lobis subacutis atque ovario fusiformi piloso-glandulosis. *Corolla* hypocrateriformis, fere recta, extus parce minuteque piloso-glandulosa, intus infra medium pilosula, lobis brevibus rotundatis. *Stamina* brevissime exserta, filamentis glabris. *Ovarium* 5-loculare, multiovulatum, stylo filiformi glabro, stamina paullo superante. *Fructus* angularis, glandulosus ; semina (perfecta non visa) ovoidea, lævia.

CHINA : Mountains north of Mengtze, Yunnan, at 7,000 ft., *A. Henry*, 9692 C.

From the above description, it is evident that *Leycesteria sinensis* is quite distinct from the familiar *L. formosa*, which has elongated racemes and large coloured bracteoles below the flowers. It is equally distinct from *L. glaucophylla*, Hook. f., which has loose racemes of flowers and very small bracteoles. Dr. A. Henry collected all three species in Yunnan, but sends comparatively little of the one here figured, which he seems to have taken for a possible variety of *L. formosa*, as he sends the latter under the same number, though lettered as from a different locality.—W. BOTTING HEMSLEY.

Fig. 1. small portion of leaf showing hairs ; 2. pistil and calyx ; 3. section of corolla and ovary ; 4. a young fruit ; 5. a cross section of ovary ; 6. an imperfect seed. *All enlarged*.

2

1

1 2 3

M.S. del. et lith.

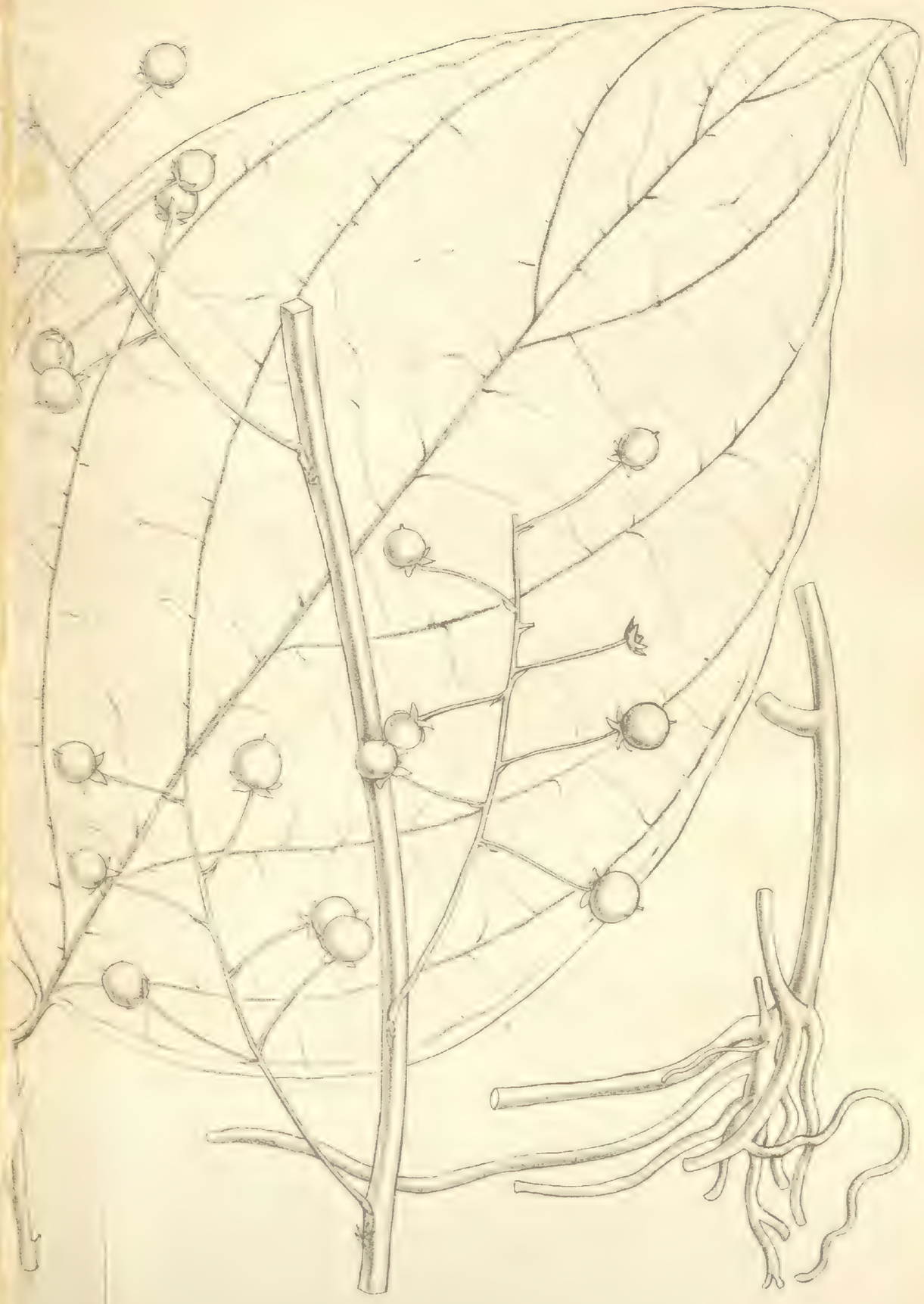


Plate 2634.

LYSIMACHIA INSIGNIS, *Hemsl.*

PRIMULACEÆ.

L. insignis, *Hemsl.* (*sp. nov.*); a speciebus omnibus hactenus descriptis habitu facile distinguitur.

Herba perennis, erecta, caulibus glabris glaucis simplicibus vel rarius furcatis apice tantum foliatis, sæpius (an semper?) bifoliatis. *Folia* opposita vel subopposita, brevissime petiolata, membranacea, ovata vel cordato-ovata, 6–9 poll. longa, 3–6 poll. lata, longe acuminata, basi rotundata vel leviter cordata, supra glabra, subnitida, pallide viridia, subtus pallida, pulverulenta, venis primariis lateralibus utrinque 6–7, venis ultimis laxe reticulatis. *Flores* . . . in racemos laxos parvos secus caulem submudum dispositi vel interdum solitarii. *Racemi* in axillis squamarum minutarum enati, horizontaliter patentes, 2–3 poll. longi, gracillimi, 3–7-flori, bracteolis minutissimis, pedicellis capillaribus 6–9 lin. longis angulo recto divergentibus. *Capsulæ* albæ (*A. Henry*), globosæ, 3–4 lin. diametro, polyspermæ, sepalis parvis ovatis acutis sustentæ; semina angularia, subovoidea embryone minuto recto.

CHINA: Forests to the south-east of Mengtze, Yunnan, at 5,000 ft., *A. Henry*, 10406.

About sixty species of *Lysimachia* are known to inhabit China, and they exhibit a greater diversity in habit, foliage, and inflorescence, than is found in the whole of the rest of the area of the genus. *L. insignis* is quite different in habit from all the other species known.—W. BOTTING HEMSLEY.

Fig. 1, a ripe fruit; 2, cross section of the same; 3, different views of a seed; 4, section of a seed showing the embryo. *All enlarged.*

Plate 2635.

BEGONIA BRETSCHNEIDERIANA, *Hemsl.*

Begoniaceæ.

B. bretschneideriana, *Hemsl.* (*sp. nov.*) ; inter species sinenses *B. Henryi* similis, differt rhizomate elongato dense squamoso, capsula exalata.

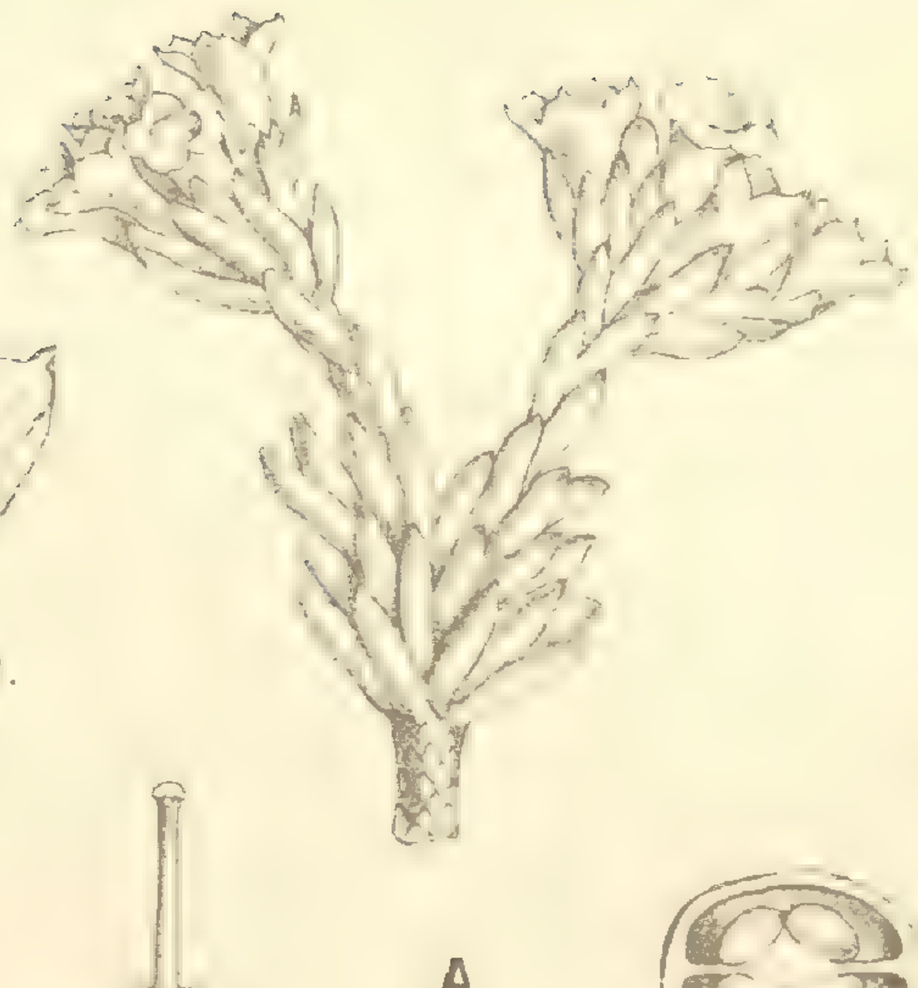
Herba vix semipedalis, rhizomate 1–3 poll. longo squamis amplis vestito. *Folia* pauca (1–4) longe petiolata, tenuia, fere membranacea, oblique rotundato-cordata, 1½–4 poll. diametro, remote sinuato-denticulata, sæpe breviter abrupteque acuminata, lobis basilaribus contiguis vel paullum superimpositis, supra glabrescentia, subtus plus minusve præcipue in venis ferrugineo-furfuracea ; petiolus 1–3 poll. longus, graciliusculus, furfuraceo-pilosus, ferrugineus. *Scapi* (vel inflorescentiæ) quam folia breviores, monoici, ferruginei, solitarii vel geminati, ad medium dichotomo-ramosi, bracteis bracteolisque ovato oblongis instructi, pedicellis filiformibus. *Flores masculi* numerosi, 6–8 lin. diametro ; sepala 2, orbicularia ; petala 2, lineari-oblonga, sepala æquantia ; stamina numerosa, filamentis filiformibus liberis. *Flores feminei* centrales, breviter pedicellati, sepalis petalisque ut in masculis. *Ovarium* 3-loculare, placentis bipartitis multiovulatis, stigmatibus 3 tortuosis. *Capsulæ* oblique oblongæ vel rectæ, circiter 6 lin. longæ, exalatæ ; semina perfecta non visa.

China : province of Kwangtung, *C. Ford*, 87 of 1887 collection.

Begonia bretschneideriana is thus named to commemorate the author of the "History of European Botanical Discoveries in China :" probably the most complete account of the botanical exploration of a country extant. It is a very distinct species, especially in the fruit.—W. Botting Hemsley.

Fig. 1, a bract ; 2, a female flower ; 3, stigmas ; 4 and 5, fruit ; 6, cross section of the same ; 7, an hermaphrodite flower. *All enlarged except* 4.

2.



3.

A.

4.

1.

6

9 8

5

10

7

B.

11

Plate 2636 A.

BENTHAMIELLA NORDENSKIOLDII, *Dusén*.

Solanaceæ. Tribe Cestrineæ.

B. Nordenskioldii, *Dusén*, ms. (*sp. nov.*) ; a *B. patagonica*, Speg., foliis angustioribus acutis et floribus minoribus differt.

Fruticulus humilis. *Folia* erecta, imbricata, densissime conferta, 3–4½ lin. longa, ¾ lin. lata, linearia, acuta, supra concava, subtus leviter carinata, crassiuscula, subrigida, glabra. *Flores* in axillis foliorum superiorum solitarii, sessiles, bibracteati. *Bracteæ* 2–2⅓ lin. longæ, ⅕ lin. latæ, lineares, acutæ, glabræ, parce glanduloso-ciliatæ. *Calyx* 2–2⅓ lin. longus, campanulato-tubulosus, 5-dentatus, extus glaber, intus minute glandulosus, dentibus ¾ lin. longis acutis minute glanduloso-ciliatis. *Corolla* 4–5 lin. longa, 1½–1¾ lin. diam. cylindrica, apice plicato-5-loba, glabra, lobis ⅓ lin. longis truncatis apiculatis. *Stamina* 5, inclusa, glabra, filamentis vix ⅕ lin. longis, antheris ½ lin. longis late oblongis obtusis minute apiculatis. *Ovarium* breve, subcylindricum, apice depresso-truncatum, glabrum, 2-loculare, loculis 4–6-ovulatis : stylus filiformis, inclusus, glaber, stigmate pulvinato.

South Patagonia : *Nordenskiold.*

This is the second species at present known of the genus *Benthamiella*, Speg., which is closely allied to *Fabiana*, Ruiz and Pav., chiefly differing in habit and the few ovules in each ovarian cell. For the opportunity of figuring it we are indebted to Mr. P. Dusén, who presented a specimen to Kew in April 1899.—N. E. Brown.

A. Fig. 1, a flower, accompanied by a leaf and two bracts ; 2, corolla laid open, 3, pistil ; 4, transverse section of the ovary. *All enlarged.*

ACICARPHA ROSULATA, *N. E. Brown.*

CALYCEREÆ.

A. rosulata, *N. E. Brown* (*sp. nov.*); habitu a speciebus reliquis distinctissima.

Herba subacaulis, caule simplici. *Folia* numerosa, dense rosulata, coriacea, spathulata, $\frac{1}{2}$ poll. longa, $\frac{1}{4}$ poll. lata, integra vel 3 dentata, obtusa, in petiolos cuneatim-angustata, glabra. *Capitula* numerosa, in axillis bractearum palmatisectarum sessilia, dense conferta. *Involucri* bracteæ in cyathium multidentatum connatæ; dentes $1\frac{1}{4}$ lin. longi, lineari-lanceolati, acuti. *Flores* exteriores 8–10 fertiles, centrales 4–6 steriles. *Calyx* 5-dentatus. *Corolla* $1\frac{1}{2}$–$1\frac{3}{4}$ lin. longa, tubulosa, 5-dentata, dentibus $\frac{2}{3}$ lin. longis lineari-oblongis apice incrassatis erectis. *Stamina* 5, filamentis alte connatis. *Ovarium* glabrum. *Achænia* matura ignota.

SOUTHERN PATAGONIA: Cerro Toro, *Nordenskiold*, A 60.

This remarkable species differs from all the other members of the genus in its dwarf habit and densely rosulate leaves, and at first sight would seem to be better placed in *Boopis*, but the cohesion of the filaments decides us to place it in *Acicarpha*. It was collected by Dr. Nordenskiold during a Swedish expedition to Antarctic America in 1895-1897, and was sent to Kew for determination by Mr. P. Dusén of Stockholm.—N. E. BROWN.

B. Figs. 5 & 6, leaves; 7, a separate head of flowers with its involucre and bract; 8, flower; 9, bracteole; 10, longitudinal section of flower; 11, three anthers and a fragment of the staminal tube. *All enlarged.*

M. Bouchet et Kohn.

Plate 2637.

ZSCHOKKEA UTILIS, *Hemsl.*

Apocynaceæ.

Z. utilis, *Hemsl.* ; Tabernæmontana utilis, Arn. in *Edinb. N. Phil. Journ.* viii. (1830) p. 318 ; ad *Z. monospermam* arcte accedit sed foliorum venis primariis paucioribus differt.

Arbor 30–40-pedalis, trunco 16–18 poll. diametro, ramulis ultimis floriferis rigidis rectis glaberrimis, internodiis brevibus. *Folia* petiolata, coriacea, glaberrima, oblonga vel oblongo-lanceolata, usque ad 6 poll. longa, 1½–2½ poll. lata, obtuse acuminata, basi rotundata vel subcuneata, costa supra impressa, subtus elevata, venis primariis lateralibus utrinque circiter 15 leviter curvatis, venis ultimis obscuris. *Flores* 7–9 lin. longi, breviter pedicellati, in cymas axillares parvas trichotomas breviter pedunculatas dispositi. *Calycis lobi* minuti, rotundati, persistentes. *Corollæ tubus* cylindricus, rectus, supra ovarium constrictus, supra medium circum antheras paullo inflatus, extus glaber, intus infra stamina hirsutus ; limbi lobi brevissimi, erecti, rotundati. *Stamina* medio tubi affixa, filamentis brevissimis, antheris omnino inclusis. *Ovarium* glabrum, 2-loculare, loculis multiovulatis, stylo stamina vix æquante. *Fructus* baccatus, ovoideus, 8–10 lin. longus, 1-spermus (an semper ?). *Semen* ovoideum vel ellipsoideum, testa brunnea, membranacea, albumine corneo ; embryo axilis, amplus, rectus, cotyledonibus compressis tenuibus cordatis undulatis, radicula brevi.

British Guiana : Upper Demerara river, *Jenman*, 4275 ; near Rockstone, Essequibo river, *Jenman*, 7491.

This is one of the trees called *Hya hya* by the natives of Guiana ; and it is the cow-tree of the English colonists. Mr. G. S. Jenman, to whom Kew is indebted for the specimens described and figured here, states in a letter accompanying the specimens, that a bottle of milk was taken from the same tree and allowed to dry in the bottle, when it was found to contain a large proportion of rubber of good quality. G. A. Walker Arnott's botanical description (*Edin. N. Phil. Journ.* viii., 1830, pp. 315–318), is preceded by a detailed account of the *Hya-hya* or milk-tree of Demerara, by James Smith, from which the following paragraphs have been extracted :

"I was then in company with a Mr Couchman, the superintendent of a wood-cutting establishment in the immediate vicinity. We had

sent a lad to search around for the tree, and he returned in a short time to tell us he had met with it. We followed him to the spot, and found that he had felled the tree. It had fallen across a little rivulet the water of which, when we arrived, was completely whitened from its juice. On striking a knife into the bark, a copious stream of milk-like fluid immediately followed. Our guide drank of it, and Mr. Couchman and myself tasted it after him. It was thicker and richer than cow's milk, and destitute of all acrimony, leaving only a slight feeling of clamminess on the lips. I had already seen that it mixed freely with the water of the little stream, and as I slept that night near the spot, the next morning Mr. Couchman and myself drank it in warm coffee. With this it commingled equally well, and lost all the viscosity before perceptible in its pure state, so much so as to appear to us incapable of being distinguished from animal milk. Mr. Couchman was determined, he said, to use it as a substitute for milk at his little neighbouring woodland establishment. A variety of experiments, too, have since tended to confirm me in my opinion, that it in no way differs in quality from the vegetable milk of the cow-tree. Yet it was plain that the tree was not that described by Humboldt."

"The milk I send you has now been in bottle thirty-six days. It did not commence to curdle before the seventh day after it was taken from the tree, and even then the process appeared exceedingly slow; so much so, that on the twelfth day I used some of another portion, which had been bottled at the same time, in tea, without its being distinguished from animal milk by those who drank it."

The very closely allied *Lacmella edulis*, Karst. (*Fl. Columb.* ii. p. 101, t. 152), is described as yielding a drinkable juice or sap, called *leche y miel*, literally milk and honey, by the Spanish Americans.

An analysis of the milk of *Zschokkea utilis*, sent home by Mr. James Smith, was published by Professor R. Christison (*Edin. N. Phil. Journ.* ix. (1830) pp. 31 35).

With regard to the systematic position of the plant here figured there may be some doubt, because the limits of the allied genera are badly defined; but it certainly should not be left in *Tabernaemontana*.—W. Botting Hemsley.

Fig. 1, a flower; 2, pistil and portion of calyx; 3, a corolla; 4, vertical section of ovary; 5, a seed; 6, a section of the same showing the embryo in position; 7, embryo. *All enlarged.*

3.

4

2

1

5

M S. del. et lith

Plate 2638.

ERYNGIUM GOLDMANI, *Hemsl.*

E. Goldmani, *Hemsl.* (*sp. nov.*); ex affinitate *E. Rosei*, Hemsl. (*huj. op.* t. 2579), a quo differt inflorescentia magis ramosa, involucri bracteis argute multidentatis.

Herba perennis (ut videtur), subscaposa, omnino glaberrima. *Folia* subsessilia, coriacea, indivisa, radicalia spathulata, 1–2½ poll. longa, apice rotundata, deorsum gradatim attenuata, margine crebre longeque setoso-aculeata, venis immersis obscuris; folia caulina ad basin ramulorum inflorescentiæ pauca, spathulata, circiter pollicares, aculeato-lobulata. *Scapi* vel caules floriferi, erecti, circiter pedales, supra medium pauciramosi, ramis sæpius 4 monocephalis medio 2–3-bracteatis. *Capitula* parva, subglobosa, absque bracteis usque ad 6 lin. diametro. *Involucri bracteæ* 8–10, stellatim divergentes, crassæ, rigidæ, spathulatæ, 6–9 lin. longæ, inter se leviter obtegentes, a medio alte arguteque aculeato dentatæ. *Paleæ* rigidæ, e basi latiuscula sursum abrupte attenuatæ, acutæ. *Calycis dentes* ovato-oblongi, apiculati, circiter ½ lin. longi. *Petala* apice 4–5-dentata. *Carpella* (matura non visa) squamis numerosissimis uniformibus ornata; vittæ inconspicuæ, ut videtur 5 dorsales et 2 commissurales; styli divergentes, arcte curvati.

North Mexico: Sierra Madre, near Guasarachi, Chihuahua, at 6,500 to 6,800 feet, *Goldman*, 168.

Figured from specimens lent for the purpose by the Secretary of the Smithsonian Institution, Washington, U.S.A., through the intermediary of J. N. Rose, Ph. D., of the Botanical Department.
W. Botting Hemsley.

Fig. 1, a pale; 2, a flower; 3, a petal; 4, a carpel; 5, cross section of a carpel. *All enlarged.*

Plate 2639.

ONOSMA EXSERTUM, *Hemsl.*

Boraginaceæ.

O. exsertum, *Hemsl.* (*sp. nov.*); species ob stamina longe exserta distincta.

Herba 4–5-pedalis, caulibus erectis infra inflorescentiam simplicibus cavis sulcatis hispidis. *Folia* radicalia ignota, caulina sessilia, sed haud semiamplexicaulia, crassiuscula, vix coriacea, lineari-lanceolata, usque ad 9 poll. longa, maxima vix 1¼ poll. lata, utrinque attenuata, acuta, pilis basi incrassatis strigoso-hispida et præcipue subtus pubescentia. *Flores* cymosi, longiuscule pedicellati, in paniculam terminalem angustam circiter pedalem dispositi, bracteis foliaceis parvis. *Sepala* fere libera, crassa, rigida, hispida, erecta, lineari-oblonga, circiter 3 lin. longa, obtusa. *Corolla* inflato-hypocrateriformis, 4–5 lin. longa, extus intusque puberula, limbi lobis minutis deltoideis. *Stamina* circiter 3 lin. supra corollam exserta, filamentis filiformibus glabris paullo supra basin corollæ liberis, antheris linearibus fere 3 lin. longis. *Nuculæ* oblique ovoideæ, glabræ, læves.

China: on grassy hills near Mengtze, Yunnan, at 6,000 feet, *A. Henry*, 9334.

The genus *Onosma* is numerous in species in the Mediterranean region and eastward to North-western India and Western Central Asia; but until comparatively recently it was not known to be represented east of Sikkim. *O. burmanica*, Coll. et Hemsl., was discovered by Colonel Sir Henry Collett in the Shan Hills in 1887. *O. paniculatum*, Bur. et Franch., was one of Bonvalot and Prince Henry of Orleans's discoveries in Szechuen, and the authors state (*Journ. de Bot.* 1891, p. 105) that the Abbé Delavay had collected about half-a-dozen undescribed species in the province of Yunnan.—W. Botting Hemsley.

Fig. 1, pistil and portion of calyx; 2, insertion of stamens; 3, a nutlet. *All enlarged.*

M.S del. et lith

Plate 2640.

CHLORIDION CAMERONI, *Stapf.*

Gramineæ. Tribe Paniceæ.

Chloridion, *Stapf* (*gen. nov.*). *Spiculæ* parvæ, 2 valves, lanceolatæ, aristatæ, a dorso compressæ, deciduæ, geminatæ, inæqualiter pedicellatæ, secundæ in axibus applanatis racemorum digitatorum, rhachilla subnulla. *Gluma* inferior suppressa, superior minuta, hyalina. *Valvæ* admodum dissimiles ; inferior sterilis, tenuiter aristata, prominenter 7-nervis, inter nervos parallelos tenuis, marginibus inflexis, cum palea squamiformi minutissima ; superior fertilis, inferiore brevior, mutica, tenuiter 3-nervis, papyracea. *Palea* florem ♀ subtendens 2 nervis, cæterum eius valvæ similis. *Lodiculæ* 0. *Stamina* 3. *Ovarium* oblongo-ovoideum ; styli ima basi connati, longi, gracillimi ; stigmata sub apice spiculæ ipso exserta, perbrevia. *Caryopsis* ignota. Gramen *perenne. Foliorum laminæ lineares, planæ ; ligulæ brevissimæ, membranaceæ. Racemi* 4-6, *digitati, suberecti. Spiculæ numerosæ, congestæ, bicolores.*

C. Cameroni *Stapf* (*species unica*). *Culmi* erecti 2-3½-pedales, glabri, striati, 6-7-nodi, internodiis superioribus interdum breviter, summo longius exsertis. *Foliorum vaginæ* subcompressæ, striatæ, inferiores dense pilosæ, superiores glabratæ ; ligulæ ciliolatæ ; laminæ lineares, longe attenuatæ, acutæ, ad 8 poll. longæ, 2-4 lin. latæ, utrinque subadpressæ, pilosæ, pilis post ligulam longiusculis densis, nervis numerosis arctis, marginibus cartilagineis asperis. *Racemi* 4-8, graciles, stricti vel flexuosi ; axis dorso plana, ½ lin. lata, griseo-viridis vel pallescens, minute puberula, in marginibus ciliata ; pedicelli scabriduli, longiores ad ½ lin. longi. *Spiculæ* lanceolatæ, acutæ, 1-1½ lin. longæ (arista dempta), axi adpressæ vel oblique erectæ. *Gluma* (superior) ovata, acuta vel mucronulata, ⅙-⅕ lin. longa, pallida, plerumque 1-nervis. *Valva* sterilis dorso griseo viridis vel pallescens, scaberula, apicem versus 2-carinata, carinis superne spinuloso-ciliolatæ, arista gracillima, sæpe violacea, 3-5 lin. longa ; valva fertilis oblonga, subacuta, ⅘-1 lin. longa, chartaceo-membranacea, lævis, brunnea vel fusca marginibus hyalinis exceptis, tenuiter 3-nervis, nervis sub apice anastomosantibus. *Antheræ* ⅔-¾ lin. longæ. *Styli* ⅕ lin. longæ ; stigmata ⅓ lin. longa, purpurea.

British Central Africa : Shire Highlands, *Buchanan*, 407 ; North Nyasa, *Whyte* ; Namasi, *Cameron*, 15 (coll. of 1899).

Chloridion might be described as a *Digitaria* in which the lower glume is entirely suppressed and the upper reduced to a scale, whilst the lower (barren) valve runs out into a fine bristle-like awn. The pale in the axil of the lower valve is represented by a mere scale or two collateral scales $\frac{1}{25}$–$\frac{1}{20}$ lin. long. A similar reduction of the glumes and the lower pale occurs in the section which I now designate *Setaridium* of *Digitaria* (§ *Setariopsis*, Stapf, in Thiselton-Dyer, *Fl. Cap.* vii. 373, 1898, not *Setariopsis* (gen.) of Scribner in Field, *Columb. Mus.* i. 288, 1896); but the species of this section have no awn, nor is there in any other species of *Digitaria*, and they have distinct lodicules. The general appearance of the inflorescence is strikingly like that of *Chloris pycnothrix*, Trin.—O. Stapf.

Fig. 1, spikelet, with the upper (only) glume at the base; 2, the same, seen from the other side; 3, fertile floret, lower part with 2 scales at the base, representing the pale of the barren floret; 4, fertile valve; 5, pale of the fertile floret; 6, usual form of the pale of the barren floret; 7, pistil. *All enlarged.*

Plate 2641.

DRACONTOMELUM SINENSE, *Stapf.*

Anacardiaceæ.

Dracontomelum sinense, *Stapf (sp. nov.)*; affinis *D. mangifero* Blume, foliolis haud nitidulis, minoribus, tenuioribus, nervis magis curvatis, reticulatione tenuiore, panicula minore, minus pilosa, fructibus minoribus diversa.

Arbor 20–30 ped. alta; ramuli novelli angulosi tenuissime griseo-tomentelli. *Folia* 5–7-juga; petiolus cum rhachi angulatus, tenuissime tomentellus, 5–7 poll. longus; petioluli 1–2 lin. longi; foliola ob inferiora sæpe minora latioraque plerumque inæqualia, majora oblonga, acuminata, basin versus asymmetrica 3–3½ poll. longa 10–15 lin. lata membranacea, costa excepta glabra, opaca, nervis lateralibus utrinque circiter 8–9 a medio vel infra valde curvatis, venis demum prominulis. *Panicula* foliis breviores, cum pedunculo 4–6 poll. longa, minutissime parceque puberulæ; pedicelli 1½–1 lin. longi. *Sepala* late ovata, obtusa, 2 lin. longa, tenuissime tomentella. *Petala* alba, lanceolata vel linearia, apice recurva, superne cohærentia, 3 lin. longa. *Filamenta* tenuia, petalis subæquilonga. Drupa globosa flavida acidula; putamen obtuse 3–5-gonum, depressum, ⅔–¾ poll. dimetiens, 5-loculatum, sæpe ob loculos 1–2 steriles 4–3-spermum. *D. mangiferum* (?), Hemsl. in *Journ. Linn. Soc.* xxiii. 149, non Blume.

Tropical Eastern Asia: Tonkin, in woods in the valley of the Lankok, *Balansa*, 3427; near Sontay, *Balansa*, 3428. Hanoi, in gardens, *Balansa*, 4378, 4401, 4527, 4604. South China, commonly cultivated on the West River, *Ford*, 10.

Mr. Ford's specimens were accompanied by a label stating that "this is said to yield Chinese Olives," and this label was referred to by Mr. Hemsley l.c. I find, however, that there is a sheet in the herbarium, containing a flowering branch, communicated by Ford, of *Canarium Pimela*, the plant actually yielding the "Chinese Olives" (see Hance in *Journ. of Bot.* 38). This specimen was, according to a note on the sheet, received mixed with Ford's specimen of *Dracontomelum sinense*, and I suspect that the name "Chinese Olives" was originally intended for the Canarium, or that the fruits of either species are known by the name in South China. There is little difference in the panicles, flowers, and fruits of *D. sinense* and *D. mangiferum*, apart from the length of the panicles and the size of the fruits, as all the species of this genus resemble each other very much in those points: but the much smaller and thinner leaflets distinguish *D. sinense* sufficiently from *D. mangiferum*.—O. Stapf.

Fig. 1, flower; 2, fruit, copied from a coloured figure in the collection of drawings at Kew; 3, stone; 4, stone cut open; 5, seed; 6, embryo. *All enlarged.*

PLATE 2642.

KOELREUTERIA MINOR, *Hemsl.*

SAPINDACEÆ.

K. minor, *Hemsl. (sp. nov.)* ; a speciebus duabus descriptis foliorum et fructuum exiguitate differt.

Arbor parva vel frutex 13-pedalis (*C. Ford*), ramulis fructiferis crassiusculis brevibus pubescentibus. *Folia* in apicibus ramulorum confertissima, simpliciter pinnata, breviter graciliterque petiolata, maxima vix 6 poll. longa, præcipue subtus et secus rhachim tenuissimam pubescentia, demum glabrescentia ; foliola 15–21, confertissima breviter vel brevissime petiolulata, tenuia, rigiduscula, oblique lanceolata, $\frac{3}{4}$–$1\frac{1}{2}$ poll. longa, maxima 6 lin. lata, obtusa, basi semirotundata vel subcuneata. margine crenulata. *Flores* in paniculas axillares et subterminales folia æquantes vel superantes dispositi. *Calyx*, etc. . . . *Capsula* 3-alata, ante dehiscentiam circiter 9 lin. longa lataque ; semina subglobosa, strophiolata, circiter 2 lin. diametro, fere nigra, nitida, embryone spiraliter convoluto, cotyledonibus longissimis, radicula brevi.

CHINA : Province of Kwangtung, *C. Ford*, 291, August 1887.

Of this miniature *Koelreuteria* no flowers have yet been received, but it is so very distinct that we do not hesitate to describe the otherwise complete specimens. It is only known to us from the province of Kwangtung, whereas the original *K. paniculata*, Laxm., ranges from Japan to Kansuh and Szechuen, and the more recently described *K. bipinnata*, Franch., extends from Formosa, Ningpo, and Kiukiang, to Western Yunnan.—W. BOTTING HEMSLEY.

Figs. 1 and 2, a seed in different positions ; 3, a section of the same, showing the embryo; 4, the same, with the embryo removed. *All enlarged.*

Plate 2643.

COCHLEARIA HOBSONI, *Pearson.*

Cruciferæ. Tribe Alyssineæ.

C. Hobsoni, *H. H. W. Pearson (sp. nov.)* ; species affinis *C. himalaicæ*, Hook. f. et Thoms., a qua habitu, petalorum forma et stylo post anthesin reflexo differt.

Herba annua (?), suberecta, glanduloso-pubescens, paullulum ramosa, 6–8 poll. alta. *Foliorum* laminæ parvæ, cuneatim in petiolos breves attenuatæ, integræ vel inferiorum interdum 3-lobatæ, ovatæ, obtusæ, glabræ, 2–3 lin. longæ. *Flores* 3–4 lin. diametro, solitarii, axillares. Pedunculi 6–10 lin. longi, lineis lateralibus binis oppositis glanduloso-pubescentibus instructi. *Sepala* æqualia, similia, hyalina, ovata, obtusa, 3-nervia, basi saccata, apice paullulum crenata, utrinque glabra, 1–5 lin. longa. *Petala* late elliptica 4 lin. longa, obtusa, basi subcordata, penninervia, glabra, violaceo-rubra. *Filamenta* basi dilatata, supra violaceo-rubra ; antheræ concolores. *Ovarium* breviter stipitatum, 1-loculare, glabrum ; stylus rectus, quam ovarium longior. *Ovula* 3–5, biseriata. *Siliculum* 2 lin. longum, stylo valde reflexo. Seminis testa punctata ; cotyledones accumbentes.

Tibet : Yatung, near the Sikkim border, *Hobson.*

It is doubtful whether this species belongs to the genus *Cochlearia*. It is, however, placed here for the present on account of its close affinity to *C. himalaica*, Hook. f. and Thoms. Mr. Hobson also collected another specimen closely related to the one here described, and identical with Watt, 5795, from Jongri. The material from both collections is, however, so meagre that it is impossible to assign it to a species.—H. H. W. Pearson.

Fig. 1, a flower from which the petals have been removed ; 2, a sepal seen from within ; 3, a petal ; 4, a stamen ; 5, a pistil and disc ; 6, a cross section of the ovary ; 7, a fruit ; 8, seed ; 9, an embryo. *All enlarged.*

Plate 2644.

OSTEOMELES SUBROTUNDA, *C. Koch.*

Rosaceæ. Tribe Pomeæ.

O. subrotunda, *C. Koch* in *Ann. Mus. Bot. Lugd. Bat.* i. p. 250 : *Franch. et Savat. Enum. Pl. Jap.* i. p. 143 ; a formis omnibus hujus generis nobis cognitis foliolis crassis paucioribus apice rotundatis supra glabris atroviridibus et stylis glabris differt.

Frutex ramosus, nanus (?) novellis plus minusve sericeo-hirsutis, ramulis ultimis sterilibus gracillimis, floriferis lateralibus rigidis brevibus. *Folia* conferta, brevissime petiolata, $\frac{3}{4}$–$1\frac{1}{2}$ poll. longa ; foliola 11–17, contigua, brevissime petiolulata, crassa, demum fere coriacea, obovato oblonga, $1\frac{1}{2}$–3 lin. longa, apice rotundata, sæpius minute apiculata, ob apiculum deciduum demum obscure emarginata, supra glabrescentia, nitida, subtus adpresso-sericea ; stipulæ lineares, cito deciduæ. *Flores* albi, circiter 6 lin. diametro, in corymbos parvos ramos laterales breves terminantes dispositi. *Calyx* albo-sericeus, dentibus lanceolato ovatis acutis quam petalis paullo brevioribus. *Petala* oblongo-rotundata. *Ovarium* 5-loculare, stylis glabris stamina æquantibus. *Fructus* maturus non visus.

China : North river, Kwangtung, *C. Ford*, 614, April 1896. Also recorded from Japan.

Most authors have regarded *Osteomeles subrotunda*, C. Koch, as a variety of *O. anthyllidifolia*, Lindl., or even reduced it to this species, without giving it the status of a variety. Indeed, I, among others, formerly considered all the forms of *Osteomeles* found in the Pacific Islands and Eastern Asia as belonging to one species, *anthyllidifolia*. The plant here figured is in cultivation at Kew and elsewhere, and Mr. G. Nicholson, the Curator, called my attention to it, pointing out characters in which it differs from the forms represented in the *Botanical Magazine*, t. 7354. So far as we know, it has not produced flowers under cultivation in Europe, and it was originally described by Koch from flowerless specimens. But Kew possesses flowering specimens received from Mr. C. Ford, superintendent of the Hong Kong Botanic Garden, in 1896. The specimens were from a plant originally obtained from the North river, Kwangtung, and cultivated in Hong Kong. After examining the copious material of this genus at Kew from Eastern Asia, I now think that there are several distinguishable, though not very distinct, species.—W. Botting Hemsley.

Fig. 1, part of a leaf seen from below ; 2, a petal ; 3, stamens ; 4, longitudinal section of ovary. *All enlarged.*

Plate 2645.

ACTINOSTEMMA BIGLANDULOSUM, *Hemsl.*

Cucurbitaceæ.

A. biglandulosum, *Hemsl.* in *Hook. Ic. Pl.* t. 2622 (speciei descriptio hic emendata et aucta); species foliorum lobis 2 basilaribus conspicue 2-glandulosis facile distinguitur.

Herba monoica, gracillima, alte (saltem 20 ped.) scandens, fere undique glabra vel glabrescens, ramulis floriferis elongatis fere filiformibus. *Folia* (ramulorum floriferorum) longe graciliterque petiolata, subcarnosa, lævia, glabra, cordato-rotundata, absque petiolo 2–3 poll. longa lataque, obscure 3–5-lobata, basi sæpius auriculato-bilobata, interdum rotundato-lobata, lobis glandula parva clavata instructis; petioli gracillimi, 1½–3 poll. longi. *Cirrhi* capillares, simplices vel furcati, folia æquantes vel longiores. *Flores masculi* 6–8 lin. diametro, in paniculas laxas axillares quam folia longiores dispositi. *Calycis* et *corollæ segmenta* similia, membranacea, tenuissima, anguste lanceolata vel fere linearia, acutissima, patentia. *Stamina* 5, quam petala breviora, quorum 4 filamentis crassiusculis per paria alte cohærentia, quintum liberum; antheræ biloculares, loculis discretis, connectivo incrassato supra loculos in caudam tenuem elongato. *Flores feminei* 7–9 lin. diametro, nunc axillares, solitarii, breviter pedunculati, nunc pauci aggregati, cymosi, pedunculis longioribus. *Calycis* et *corollæ segmenta* similai, lineari-lanceolata. *Ovarium* globosum, setosum, 3-loculare, loculis 2–3-ovulatis, ovulis ab apice loculorum pendulis. *Capsula* cylindracea, 1½–1¾ poll. longa, demum sicca, subcrustacea, aculeato-setosa, circiter 6-sperma, prope apicem calyptratim dehiscens; septa plus minus evanida; axis vel columna centralis cum calyptra decidua; semina compressa, tuberculato-lobulata, apice alata, cum ala circiter 10 lin. longa.

China: in woods near Mengtze, Yunnan, *Hancock*, 346; *A. Henry*, 9390.

A second figure of this plant, which has been cultivated both at Kew and Edinburgh, is given to elucidate the peculiar structure of the fruit, imperfectly described under plate 2622. The Edinburgh plant produced female flowers (some of which were obligingly communicated by Dr. I. B. Balfour) from which it is clear that the ovary is originally 3-celled, though usually, if not always, described as 1-celled. As the fruit ripens the dissepiments partially disappear, and the central axis is carried away with the operculum in dehiscence.—W. Botting Hemsley.

Fig. 1, bud of a female flower; 2, same expanded; 3, pistil with shrivelled stigma; 4, stigma in mature state; 5, cross section of an ovary; 6, longitudinal section of the same; 7, section of immature fruit; 8, section of mature ditto; 9, a seed. *All e la ged.*

PLATE 2646.

DIDESMANDRA ASPERA, *Stapf.*

DILLENIACEÆ. Tribe DILLENIEÆ.

Didesmandra, *Stapf* (*gen. nov.*). *Sepala* 5, imbricata, exteriora duo cæteris minora. *Petala* 5, imbricata, tenera. *Stamina* 10 in phalanges 2 ante carpella positas coalita ; posticum utriusque phalangis fertile, filamento crasso brevi, anthera lineari superne uncinato-curvata, connectivo apice in membranam deltoideam dilatato, loculis parallelis, longitudinaliter dehiscentibus ; stamina cætera sterilia, minora, subrecta vel leviter curvata, connectivi appendice truncato vel eroso. *Carpella* duo, libera, transverse posita ; stylus perlongus, cirrosus, filiformis. Ovulum 1, e basi erectum, anatropum, rhaphe crassissima, ventrali. *Semen* (immaturum) arillo tenuissimo hyalino-membranaceo indutum. Frutex vel Arbor *ramulis et foliis serratis asperis, petiolis basi vaginantibus, amplexicaulibus.* Inflorescentia *paniculata, parce ramosa floribus breviter pedicellatis, unilateraliter secus ramos dispositis.*

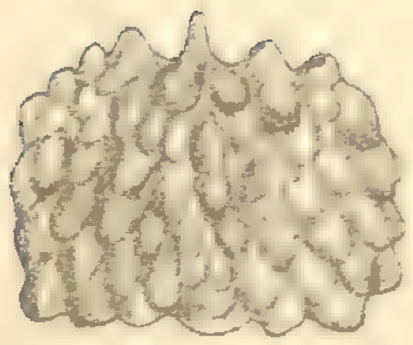
D. aspera, *Stapf* (*sp. unica*). *Ramuli* asperrimi insuper parce adpresse hirsuti, deinde glabrescentes. *Folia* oblongo-ovata, acuminata, basi rotundata, serrata, 6–8 poll. longa, 2–3 poll. lata, utrinque aspera et præcipue in nervis strigillosa, sicca supra nigro-, infra rubro-fusca ; petioli $\frac{1}{2}$–$\frac{3}{4}$ poll. longi, canaliculati, basi ramulum amplectentes. *Panicula* 6 poll. longa ; rami 2–4 poll. longi, asperi, parce strigillosi ; bracteæ parvæ, subulatæ, hirsutæ, plerumque a floribus plus minusve remotæ, interdum suppressæ. *Sepala* exteriora duo oblonga, subplana, aspera et parce minuteque strigillosa, cætera majora subnavicularia, minus aspera, omnia obtusa, ciliata, firmiuscula. *Petala* ampla, fugacia, rotundato-obovata, crenulata, ad 1 poll. longa. *Stamina* fertilia (explanata) 8 lin. longa, sterilia 3–4 lin. longa. *Carpella* glaberrima ; stylus ad 9 lin. longus, cirrosus.

BORNEO : Sarawak, Belaga on the Rejang River, *Haviland's* collector, 2324.

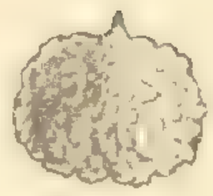
Didesmandra is nearest allied to *Schumacheria*, a genus confined to Ceylon. It differs from it in the peculiar structure of the androecium, which, in both genera, is placed in front of the gynæceum. In *Schumacheria*, the number of stamens is indefinite, and they are united into one bundle, all being equal and fertile. In *Didesmandra*, however, they are arranged in two distinct bundles and heteromorphous, and only the posterior of each bundle seems to be fertile. The flowers are also considerably larger in *Didesmandra* and of a somewhat different facies. —O. STAPF.

Fig. 1, floral diagram ; 2, carpels and one bundle of stamens ; 3, one bundle of stamens, one fertile ; 4, fertile stamen ; 5, section of a carpel ; 6, section of an ovule. *All enlarged.*

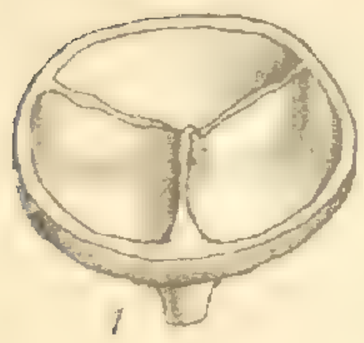
4



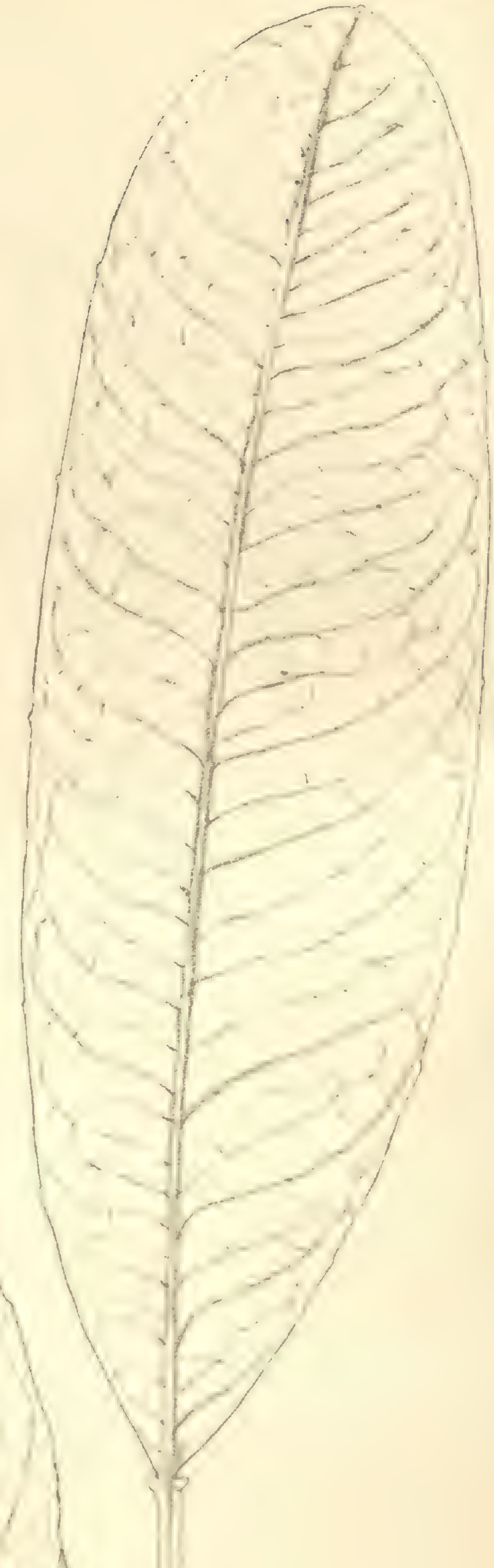
3

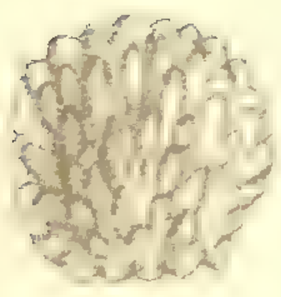


2

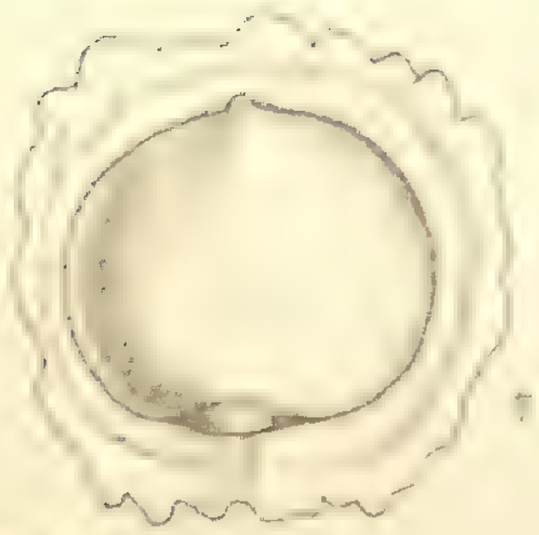


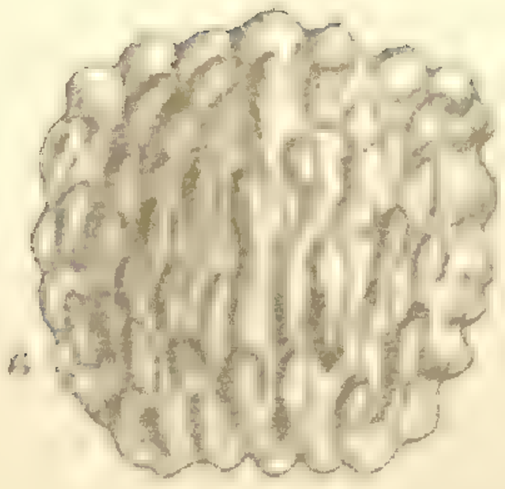
1





5





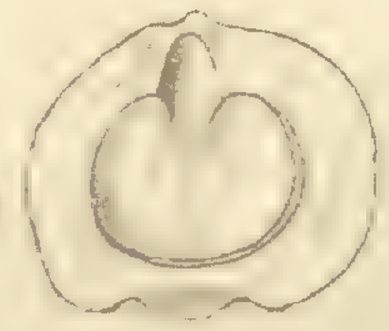


Plate 2647.

SAPIUM VERUM, *Hemsl.*

Euphorbiaceæ. Tribe Crotoneæ.

S. verum, *Hemsl.* (*sp. nov.*) ; species ex affinitate *S. stylaris*, Muell. Arg., differt foliis basi haud auriculatis. petiolorum glandulis contiguis subglobosis, stylis elongatis omnino confluentibus.

Arbor 60–80-pedalis, sursum parce laxe que ramosa (*White*, novellis glabris. *Ramuli* floriferi crassi, rigidi. *Folia* ad apices ramulorum conferta, longe petiolata, coriacea, oblonga vel oblongo-lanceolata, absque petiolo 5–8 poll. longa, apice rotundata et interdum glandula munita, sed non introflexa, basi subcuneata, margine integra vel plus minusve glanduloso-denticulata vel crenulata, costa supra impressa subtus elevata, venis primariis lateralibus numerosissimis tenuibus sinuatis superne sublibrachiato-anastomosantibus ; petioli ½–2 poll. longi, supra apice glandulis 2 contiguis subglobosis præditi. *Flores* in axillis foliorum superiorum racemosi ; racemi folia subæquantes, rachi crassa rigida. *Perianthium* etc. . . . *Capsulæ* breviter pedicellatæ, subglobosæ, 7–8 lin. diametro, 3-loculares, columna stylari elongata coronatæ ; semina compressa, rotundata vel subquadrata, circiter 4 lin. diametro, testa crustacea verrucosa ; embryo centralis, cotyledonibus orbicularibus.

Colombia : Departments of Tolima and Cauca at 6,000 to 7,000 feet, ***R. B. White* in 1890, and again in 1895, n. 9.**

This is the first of a series of figures of American forms or species of *Sapium*, drawn for publication in the *Icones*, with a view to the elucidation of their affinities. Dr. J. Mueller (Muell. Arg.) placed a large number of forms—some of which had previously been described as species—under *Sapium biglandulosum*, Muell. Arg., syn. *Excœcaria biglandulosa*, Muell. Arg., *Stillingia biglandulosa*, Baill. (*DC. Prodr.* xv. 2, pp. 1204–1207) ; but he protected himself in the following statement : " Pro coordinatione accurata synonymorum varietates et formæ variæ amplius exponendæ sunt, nonnullæ tamen hodie nimis imperfectæ notæ, olim pro speciebus distinctis forte habendæ sunt." This was in 1866, and little has been done in the genus since then except to add to the previously existing confusion and uncertainty. The activity recently developed in the cultivation of plant[s] yielding rubber

has resulted in numerous inquiries being addressed to the Director of the Royal Gardens, Kew. Many of these questions it has been difficult or impossible to answer satisfactorily. Considerable time has been expended in the examination of the forms of *Sapium* inhabiting Colombia, Venezuela, and Guiana as a beginning towards a more useful and scientific classification of the whole of the American species of this genus. It is not to be expected that we shall arrive at once at correct conclusions, because the synonymy is so involved that it is almost impossible to unravel it. Some of the earlier writers on the genus combined two or more species under one designation, while some subsequent botanists endeavoured to separate them, each in his own way, and others went still further in combining, thus creating almost inextricable confusion.

The form here figured under the name of *Sapium rerum* is from material supplied by Mr. R. B. White at different dates, which was at first referred to the supposed polymorphic species *S. biglandulosum*; and the *Kew Bulletin* (1890, pp. 149 158) contains some correspondence on this so-called "Virgen Caucho" or "Colombia Virgen," one of the main features of which is the uncertainty then surrounding its identity. In a label accompanying his specimens Mr. White states that it grows all through the Andes at 6,000 to 8,000 feet elevation. If so, it is singular that botanical travellers have neglected to collect it. It is possible that it may prove to be specifically the same as *S. stylare*, Muell. Arg., but it has been thought better not to risk further confusion by combining possibly distinct species.

There is also in the Kew collection a sample of seeds sent from Colombia by Mr. R. Thomson in 1890. He was of opinion, from his own experience and observation in the country, that it was distinct from *S. biglandulosum*; but there was not sufficient material to prove this botanically. The seed differs only in size from that furnished by Mr. White, as may be seen from the figures 5 to 8, described below, and it will probably prove to be the same species.

On this subject some notes have appeared in the *Tropenpflanzer*, No. 11, 1899; in the *Belgique Coloniale*, January 21, 1900; and in the *Revue des Cultures Coloniales*, 1900, pp. 16 and 86. Two different names, *S. Thomsoni* and *S. Tolimense*, are proposed; but as neither figures nor adequate descriptions are given, it is impossible to determine whether one or more species are in question, though probably only one, and that the same as ours. In conclusion, it may be added that *S. rerum*, Hemsl., *S. stylare*, Muell. Arg., and *S. biglandulosum* var. *moritzianum*, Muell. Arg. (*DC. Prodr.* xv. 2. p. 1206), have persistent styles; and the two last, which are probably identical, have the blade of the leaf distinctly auricled at the base, and elongated glands on the petiole.—W. Botting Hemsley.

Fig. 1, section of a fruit of the plant figured. 2, a seed of the same; 3, ditto; 4, embryo embedded in albumen. 5, a seed from the sample furnished by Mr. R. Thomson; 6, the same; 7, the same from which half of the testa has been removed; 8, embryo imbedded in albumen. *Figures* 1, 2, *and* 5 *natural size; the rest enlarged.*

3
5
6
4
2
1
D

PLATE 2648.

SAPIUM ? PAUCINERVIUM, *Hemsl.*

EUPHORBIACEÆ. Tribe CROTONEÆ.

S. ? paucinervium, *Hemsl. (sp. nov.)* ; inter species guianenses paucitate foliorum venarum primariarum distinctum.

Arbor magna (*Jenman*), ramulis crassiusculis, cortice nigrescente, novellis glaberrimis. *Folia* in ramulis floriferis conferta, in ramulis sterilibus elongatis sparsa, distincte graciliterque petiolata, coriacea, oblongo-lanceolata vel oblanceolata, cum petiolo 2 6 poll. longa, acuminata sed vix acuta, basi subrotundata, margine crebre minuteque glanduloso-serrata, supra nitida, subtus pallidiora, opaca, venis primariis lateralibus utrinque 7–9 sat conspicuis ; petioli usque ad 1 poll. longi, apice (vel basi laminæ) biglandulosi, glandulis longe graciliterque stipitatis divergentibus. *Flores* ignoti. *Capsulæ* paucæ in racemos solitarios breves subterminales dispositæ, distincte stipitatæ, 3-loculares, ovoideæ, maximæ 5 6 lin. longæ, glabræ, stylis deciduis, carpellis demum ab axi secedentibus. *Semina* oblongo-ovoidea vel ellipsoidea, circiter 3 lin. longa, membrana cellulari colorata arilliformi (stratum exterius testæ ?) inclusa, sub membrana leviter corrugata.

BRITISH GUIANA : Pomeroon river, above Maccaseema, *G. S. Jenman*, 2092.

Mr. Jenman describes this as a large forest tree, producing abundance of milk, and associated by the Indians with "toukpong." In the absence of flowers, and from the characteristics of the seeds, there is a doubt about the genus. Possibly some modifications of the generic limits may arise out of the continuation of these investigations.—W. BOTTING HEMSLEY.

Fig. 1, base of blade of leaf and glands ; 2, a fruit ; 3, a seed enclosed in the shrivelled pulpy external covering ; 4, the same without the pulp ; 5, a section of the same showing the albumen, which occupies only a portion of the cavity ; 6, a section through the same showing the embryo.—*All enlarged.*

Plate 2649.

SAPIUM JENMANI, *Hemsl.*

Euphorbiaceæ. Tribe Crotoneæ.

S. Jenmani, *Hemsl.* (*sp. nov.*); species foliis oblongo-lanceolatis abrupte obtuseque acuminatis crebre pellucido-punctatis venis primariis lateralibus numerosis tenuibus, glandulis petiolorum parvis distincta.

Arbor magna (*Jenman*) novellis glaberrimis, ramulis ultimis rectis graciliusculis, siccitate cortice nigrescente. *Folia* sparsa, longe petiolata, tenuiter coriacea, oblonga vel oblongo-lanceolata, cum petiolo 2–9 poll. longa, sæpius 3–5 poll. longa, abrupte obtuseque acuminata, basi sæpius subcuneata, haud auriculata, margine integra vel remotissime glanduloso denticulata, concoloria, crebre minuteque pellucido-punctata, venis primariis lateralibus numerosis arcuatis; petioli tenues, usque ad 1½ poll. longi, in ramulis floriferis sæpius 6–9 lin. longi, glandulis in apice sessilibus parvis sæpius oblique positis. *Spicæ* terminales, graciles, rectæ, folia superantes, bisexuales vel sæpe omnino masculæ, glandulis geminatis peltatis sub floribus instructæ. *Flores masculi* 3–7 aggregati, bracteolis minutis fimbriatis intermixti; perianthium sæpe bipartitum staminibus 2, interdum tripartitum staminibus 3. *Flores feminei* pauci, basin versus spicarum solitarii; perianthium membranaceum, gamophyllum, ovarium arcte vestiens, demum rumpens; ovarium glabrum, 1-loculare, 1-ovulatum (an primum 3-loculare, 3-ovulatum, citissimo abortu 1-loculare?); styli ramuli stigmatosi, cito decidui. *Capsulæ* tenuiter crustaceæ, semper 1-loculares, 1-spermæ, ovoideæ vel subglobosæ, 2–3 lin. diametro, 2-valves, valvis deciduis, axi (vel columna) laterali curvato seminifero cum semine persistente; semen subglobosum, compressum, circiter 2 lin. diametro, sub strato exteriore carnosum verrucosum, embryone parvo in axi albuminis.

British Guiana: throughout the alluvial forest in the Pomeroon district, *G. S. Jenman*, 2091, 6645, 7505.

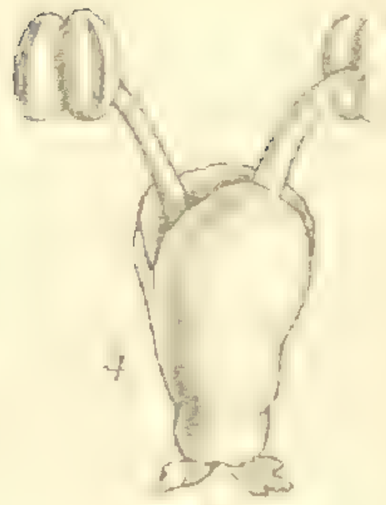
Mr. Jenman has sent copious specimens of this species, which he says is called *Toukpong* by the Caribs and *Hya-hya* by the Arawacks; but there are two or three points connected with it which the material is insufficient to clear up satisfactorily. Its characteristics are: finely veined leaves thickly beset with minute transparent glands; few marginal glands; small, usually obliquely placed petiolar glands; a

membranous, gamophyllous perianth closely enveloping the ovary, the enlargement of which eventually ruptures it; and a one-celled, one seeded capsule, the equal valves of which fall away leaving the seed hanging from the curved axis, which has become (?) lateral. The youngest ovaries I have seen are one celled, containing one ovule, and present no obvious indications of obliterated or aborted cells; yet the assumption is, from the structure of the capsule, that two out of three carpels are suppressed in an early stage of the development of the gynæceum. We are also ignorant of the shape of the style and stigma, for what looks like a sessile stigma on the ovaries represented in the plate is possibly only the scar left by a disarticulated portion.—W. Botting Hemsley.

Fig. 1, part of an inflorescence; 2, one of the pair of glands below each female flower and each cluster of male flowers; 3, bract from between the male flowers; 4, perianth of male flower laid open; 5, the two stamens of a flower; 6, calyptriform perianth of female flower; 7, longitudinal section of the one-celled ovary; 8, cross section of the same; 9, two-valved capsule and seed borne on lateral axis; 10, the same after valves have fallen away; 11, section of seed in which the albumen and embryo do not fill the cavity.—*All enlarged.*

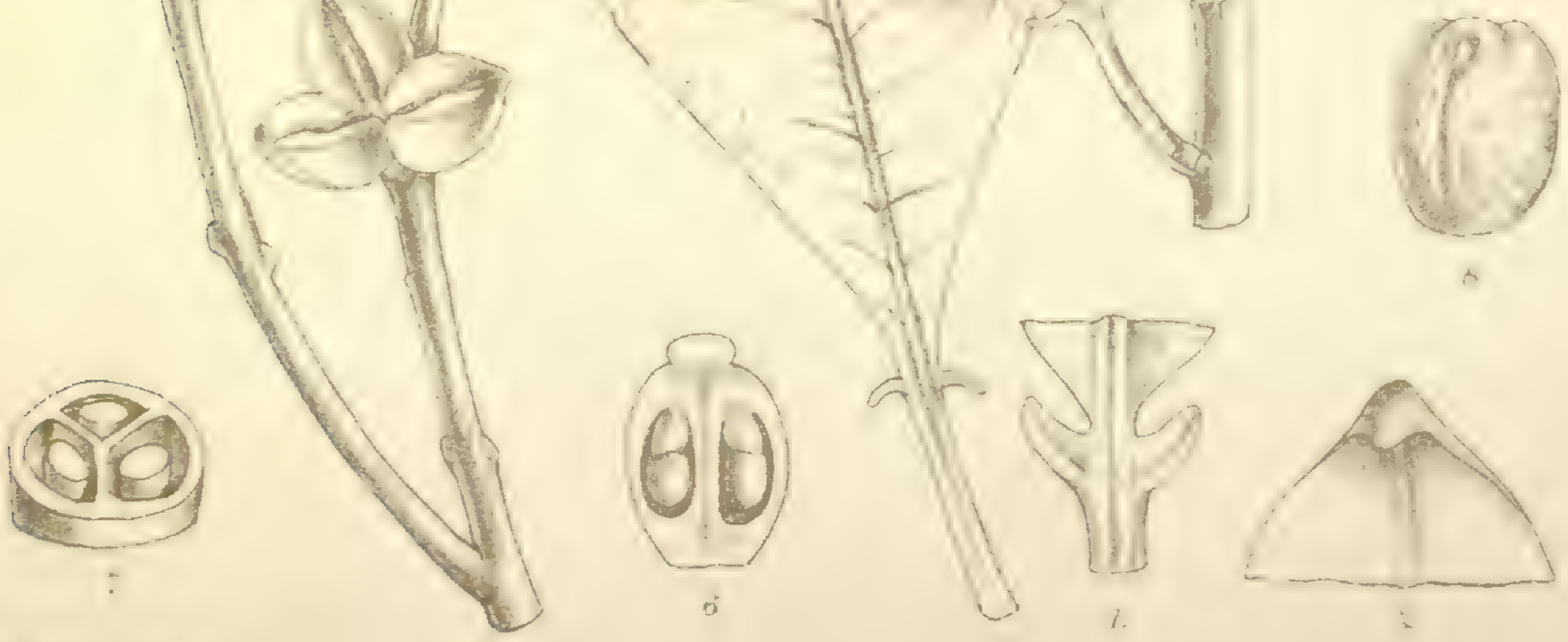
3

5



4

8



6

7

1.

2

Plate 2650.

SAPIUM AUCUPARIUM, *Jacq.*

Euphorbiaceæ. Tribe Crotoneæ.

S. aucuparium, *Jacq. Enum. Pl. Carib.* (1760) p. 31, *et Sel. Stirp. Am. Hist.* (1763) p. 249, t. 158, *excl. synon. nonnul.*) ; foliis variabilibus, venis primariis numerosis sat conspicuis curvatis, margine serrulatis et sæpe remote glandulosis, apice glandula magna instructis cuculliformi-incrassatis introrsum flexis, glandulis petiolorum elongatis obclavatis.

Arbor 50–100-pedalis (*Jenman*) novellis glaberrimis, ramulis floriferis gracilibus, internodiis brevibus. *Folia* longe vel longiuscule petiolata, tenuiuscula, demum coriacea, haud vel obscurissime pellucido-punctata, magnitudine ac circumscriptione valde variabilia, ramulorum sterilium et surculorum majora, oblonga, oblongo-lanceolata, vel oblanceolata, cum petiolo interdum usque ad 10–12 poll. longa et 3 poll. lata, crebre calloso-serrulata, margine nunc eglandulosa nunc remote glandulosa, apice acuminata et plana vel glandula instructa, introflexa, glandulis petioli sæpius deflexis ; folia ramulorum floriferorum minora, proportione latiora, interdum ovalia vel elliptica, margine sæpe fere integra, fere eglandulosa, apicis glandula cuculliformi semper bene evoluta, petioli glandulis conspicuis rectis vel sursum curvatis. *Spicæ* androgynæ, vel interdum omnino masculæ, terminales vel pseudo-terminales, sæpius solitariæ, elongatæ, usque ad 9–10 poll. longæ sed sæpius breviores, glandulis ellipticis vel oblongis peltatis conspicuis. *Flores masculi* 3–7 aggregati. *Flores feminei* solitarii. Ovarium glabrum, triloculare ; styli rami ampli, recurvi, cito decidui. *Capsula* 4–5 lin. diametro, subglobosæ, coriaceæ vel crustaceæ, triloculares, loculicide dehiscentes, valvis persistentibus. Semina subtrigona vel compresso-globosa, 2–2½ lin. diametro : testæ stratum exterius subcarnosum demum siccum, stratum interius crassum, crustaceum, corrugatum vel tuberculato-asperum ; embryo parvus. *Excæcaria biglandulosa*, var. *aucuparia*, Muell. Arg. in DC. Prodr. xv. 2, p. 1203, *saltem pro parte*.

British Guiana : common in the coast region in the neighbourhood of Georgetown, on the Canje and Lamaha rivers, and elsewhere. *Jenman*, 1957, 3653, 7506, 7508, and 7509.

In order to avoid further confusion where so much already exists, a complete synonymy of the species of the *Sapium* described above will

not be attempted here; but references may be given and some suggestions offered. First there can be little doubt that our plant is the same as that figured and described by Jacquin, excluding from his synonymy the *Sapium arboreum foliis ellipticis*, &c., of P. Browne (*Hist. Jam.* i. p. 338). Linnæus (*Sp. Pl.* ed. 2, p. 1431), under the name of *Hippomane biglandulosa*, combined at least two distinct species. Swartz, *Adnot. Bot.* (1829) p. 63, points this out, and says of *S. aucuparium*, Jacq., "foliis . . . apice rostro parvo subcartilagineo crasso introrsum flexo auctis a *Sapio jamaicensi* diversum." *S. jamaicense*, Sw., is probably the same as *S. Laurocerasum*, Desf. (*Cat. Pl. Hort. Par.* ed. 3, p. 411), published the same year, from cultivated plants. Kew possesses a specimen bearing this name from Herb. Gay, labelled: "Jardin des Plantes, Ecole, le 7e Sept. 1822." In 1818 G. F. W. Meyer (*Prim. Fl. Esseq.* pp. 275-6) distinguishes two species, namely: *S. Hippomane*, Mey., and *S. aucuparium*, Jacq.; but the synonymy is incorrect, and from his descriptions and localities it seems highly probable that both are forms of *S. aucuparium*. Going back to the earlier writers, Plukenet's *Tithymalus arbor americanus*, &c. (*Almagest. Bot.* p. 369, t. 229, f. 8), was described and figured from specimens cultivated at Hampton Court before 1691, and is recorded as having been received from Barbados. With the permission and assistance of the authorities of the Botanical Department of the British Museum, Kew has obtained accurate drawings of all Plukenet's specimens, some of which, at least, seem to belong to *S. aucuparium*; but further investigation is necessary before coming to a decision. It is almost certain, too, that the *Hippomane foliis orato-oblongis*, &c, of Plumier's *Plant. Amer.* ii. p. 164, t. 171, f. 2 (1757), is a conventionalised representation of *S. aucuparium*. But the identification of these old figures is a matter of sentiment rather than of importance.

As to the geographical area of *S. aucuparium*, neither Kew nor the British Museum possesses any West Indian specimens that could be referred to it, but it appears to be a common coast tree from Guiana to Colombia. *Sapium obtusilobum*, Muell. Arg. (*Linnæa*, xxxii. p. 116), syn. *Excaecaria obtusiloba*, Muell. Arg. (*DC. Prodr.* xv. 2, p. 1023), should, perhaps, be reduced to *S. aucuparium*. It was collected by Fendler (n. 1230) near Tovar, Merida, Venezuela, and by Goudot at Turbaco, Magdalena, Colombia. An account of the petiolar glands of "*Excaecaria biglandulosa var. grandifolia*" by F. A. Poulsen will be found in the *Vidensk. Meddel. Nat. Foren. Kjøb.* 1897, pp. 356-360, tt. 1 and 2. From the foliage figured this might well be *S. aucuparium*, Jacq.—W. Botting Hemsley.

Fig. 1, base of leaf-blade and glands; 2, apex of leaf; 3, portion of male inflorescence; 4, a male flower; 5, portion of female inflorescence; 6, longitudinal section of ovary; 7, cross section of the same; 8, a seed in its fleshy integument; 9, a section of the same. *All enlarged.*

The impression of the 'Icones' is limited to 250 copies, and the work will not be reprinted.

A small number of copies of the Third Series, comprising 1,000 plates, is offered for sale at £5 each.

Application should be made to Messrs. DULAU & CO., *37 Soho Square.*

VOL. VII.—PART III.] [AUGUST.

HOOKER'S

ICONES PLANTARUM;

OR,

FIGURES, WITH DESCRIPTIVE CHARACTERS AND REMARKS,

OF NEW AND RARE PLANTS,

SELECTED FROM THE

KEW HERBARIUM.

FOURTH SERIES.

EDITED FOR THE BENTHAM TRUSTEES BY

SIR WILLIAM T. THISELTON-DYER,

K.C.M.G., C.I.E., LL.D., M.A., F.R.S.

HONORARY STUDENT OF CHRIST CHURCH, OXFORD

DIRECTOR, ROYAL BOTANIC GARDENS, KEW.

VOL. VII.

OR VOL. XXVII. OF THE ENTIRE WORK.

DULAU & CO.

37 SOHO SQUARE, LONDON.

1900.

SPOTTISWOODE AND CO. PRINTERS, NEW-STREET SQUARE, LONDON.

Price Four Shillings.

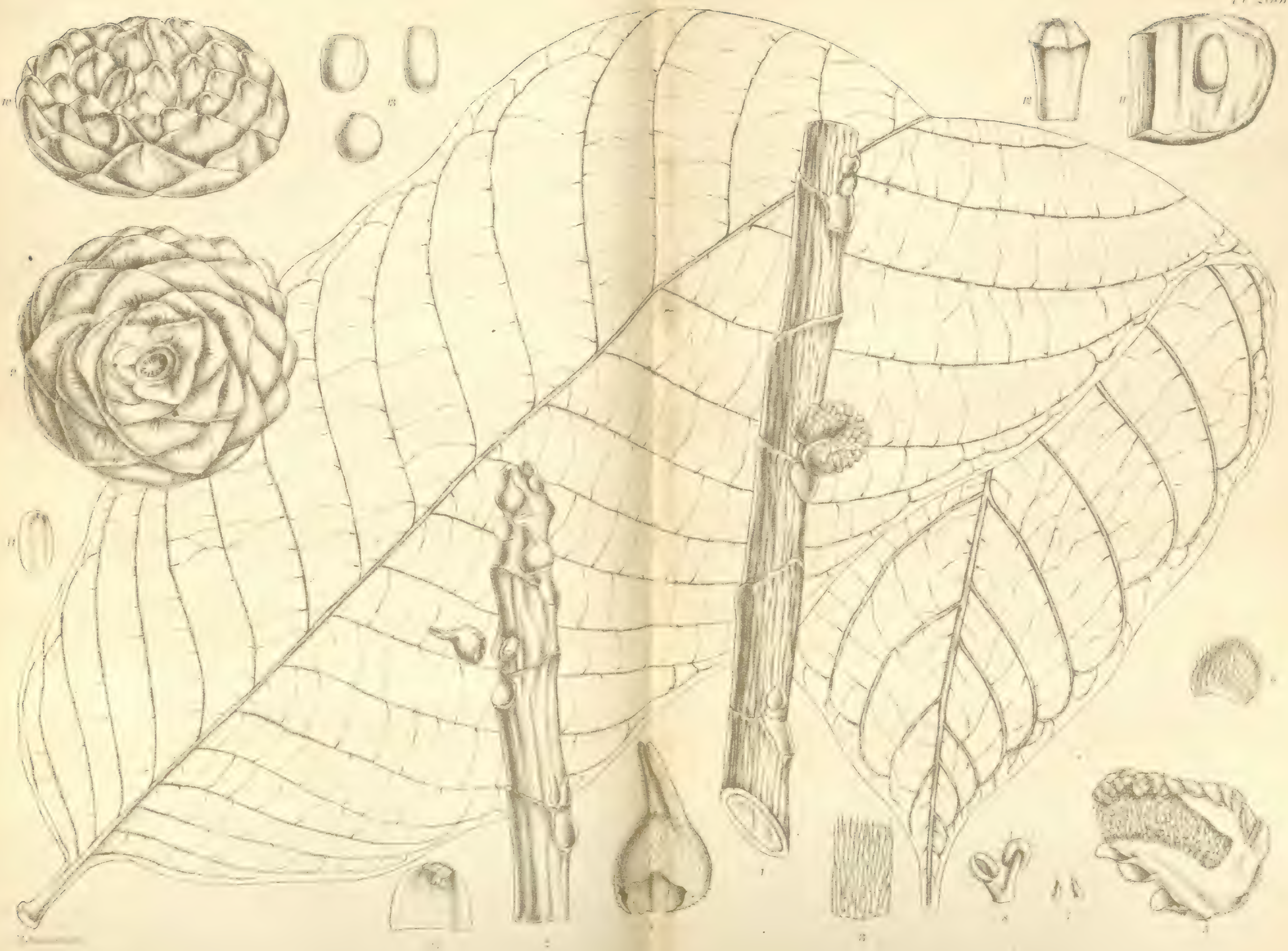


Plate 2651.

CASTILLOA TUNU, *Hemsl.*

Urticaceæ. Tribe Artocarpeæ.

C. Tunu, *Hemsl.* (*sp. nov.*) ; affinis *C. elasticæ*, Cerv., a qua differt foliis tenuioribus basi haud cordatis utrinque multo minus hirsutis, drupeolis receptaculo fere omnino immersis.

Arbor excelsa ramulis floriferis crassis valde medullosis primum strigosis demum glabrescentibus, internodiis circiter pollicaribus. *Folia* (pauca imperfecta tantum visa) vix coriacea, brevissime petiolata, oblonga vel lanceolato-oblonga, usque ad 18 poll. longa, basi rotundata, apice gradatim acuminata, supra parce strigillosa, aspera, subtus præcipue secus costam venasque minute strigillosa, sed vix aspera, inter venas parce puberula, venis primariis numerosis conspicuis curvatis prope marginem inter se connexis, tertiariis fere parallelis venas primarias connectentibus ; petioli circiter semipollicares ; stipulæ non visæ sed cicatrices prominentes oblique annulatæ. *Receptacula* in axillis foliorum delapsorum sessilia, unisexualia, masculina primum bracteis calyptriformibus tecta, feminina juvenilia non visa ; masculina circiter 6–8 lin. diametro, bracteis multiseriatis parvis hirsutis ; feminina matura, fructifera usque ad $2\frac{1}{4}$ poll. diametro, bracteis multiseriatis latis rotundatis tomentosis. *Flores masculini* nudi, diandri, filamentis basi cohærentibus. *Drupeolæ* apice tantum liberæ ; semina magnitudine ac forma variabilia, testa glabra lævi.—*Castilloa* no. 4, Hook. f. in Trans. Linn. Soc. Bot. series 2, ii. p. 212, t. 28, ff. 7–9 ; W.B.H. in Kew Bull. 1898, p. 141.

British Honduras : *Belize Estates Company*, fruits only, received May, 1886 ; *R. W. Cater*, imperfect leaves, received April, 1896.
Costa Rica : Quebrada de Potrero Grande, *H. Pittier*.

In consequence of the misapplication of the native name *tunu* or *toomu* in Morris's *British Honduras*, p. 74, and the absence of adequate specimens, this species was formerly confused at Kew with *Castilloa elastica*, Cerv. This mistake was rectified in the *Kew Bulletin*, 1898, p. 141 ; and now, through the courtesy of Prof. E. Bureau, and Messrs. Godefroy-Lebeuf and Jules and Eugène Poisson, we are able to figure *C. Tunu*, Hemsl. almost fully (young female flowers alone being wanted to complete the material) from specimens

collected by M. H. Pittier. As long ago as 1885 Sir Joseph D. Hooker published a good figure of the fruit of *C. Tunu*, in the place cited above, but he gave it no name. In an article on trees that yield caoutchouc (*Boletin de Agricultura*, etc., año 8 (1899) num. 12, p. 6), M. Pittier alludes to this species as *el hule macho*, or mule caoutchouc, 'which yields rubber in abundance and of excellent quality.' M. J. Poisson, to whom we communicated the name we proposed giving to this species, published (*Bulletin du Muséum d'Histoire Naturelle*, 1900, and in the *Revue des Cultures Coloniales*, vi. (1900) p. 302) some further particulars of this tree. But, as pointed out in the *Kew Bulletin*, 1898, p. 141, Mr. Rowland W. Cater was the first to furnish Kew with satisfactory evidence of *C. Tunu* being specifically distinct from *C. elastica*.

The name *Castilloa markhamiana* having been applied to two totally different plants, it is desirable to explain its proper application. *C. markhamiana*, Collins (*Report on Caoutchouc* (1872) p. 12, t. 3), as suggested by Bentham and Hooker (*Gen. Pl.* iii. p. 372), is a species of *Perebea*. It is very closely allied to the original *P. guianensis*, Aubl., and should bear the name *Perebea markhamiana*. *Castilloa markhamiana*, Markham (*Peruvian Bark*, p. 453), not of Collins, is *C. elastica*, Cerv., which ranges from Mexico and Honduras to Ecuador. In this wide area, extending through about 25 degrees of latitude, or 1,750 miles, *C. elastica* exhibits a considerable amount of variation, due to local conditions and the age of the trees ; but with copious herbarium material it is not possible to define varieties. Yet the name *markhamiana* is still used (*Revue des Cultures Coloniales* (1900), pp. 277, 303) for the variety, if it may be so called, of *C. elastica* cultivated in Ceylon and perhaps elsewhere. It was obtained from Darien, Panama, and there is an excellent coloured figure of it in Sir Joseph Hooker's paper cited above. A third species of *Castilloa* — *C. australis*, Hemsl. —is figured in plate 2676, ined.

Castilloa costaricana, Liebm., in *K. Dansk. Selskab.* v. 2 (1851), p. 319 ; reprint, p. 35, judging from the description and the specimens of *Castilloa* seen from Costa Rica, is not specifically different from *C. elastica*, though it is described as having 'foliis majoribus crassioribus subsessilibus vel brevissime petiolatis profundius cordatis magis abrupte acuminatis subtus dense fulvo-hispidis.'—W. Botting Hemsley.

Figs. 1 and 2, portions of a branch bearing male inflorescences ; 3, piece of bark from the same to show the strigose hairs ; 4, calyptrate bract (or bracts) which shields the male inflorescence ; 5, section of a young male inflorescence ; 6, an involucral scale ; 7, bracteoles between the male flowers ; 8, a male flower ; 9, infructescence seen from below ; 10, the same from above ; 11, a section through a portion of the same showing that the carpels (pistils) are completely immersed ; 12, a single pistil (fruit) ; 13, seeds of different shapes ; 14, embryo ; 15, portion of one cotyledon and axis.—*All more or less enlarged, except figures* 1, 2, 9, 10, 11, 12, 13, and 14.

Plate 2652.

RANALISMA ROSTRATA, *Stapf.*

Alismaceæ.

Ranalisma, *Stapf* (*gen. nov.*). *Flores* hermaphroditi. *Sepala* 3 herbaceo-membranacea, persistentia, post anthesin deflexa. *Petala* sepalis subæqualia, decidua. *Torus* sub anthesi convexus, deinde elongatus. *Stamina* 9, uniseriata, hypogyna. *Ovaria* numerosa, dense in toro congesta, libera ; stylus apicalis, rostriformis ; ovulum unicum, basilare, erectum, anatropum, micropyle extrorsa. *Carpella* matura indehiscentia, monosperma, admodum a latere compressa, alata, stylo persistente coronata, pericarpio pergamaceo glandulis subepidermalibus notato. *Semen* erectum uncinato-curvatum ; embryo hippocrepicus, radicula crassa, exterior.—Herba *perennis, paludosa, stolonifera, foliis pedunculisque basalibus.* Folia *longe graciliter petiolata, petiolo basi paulo dilatato, vaginante, lamina late elliptica vel ovato-elliptica, submembranacea.* Inflorescentia *cymosa, cyma plerumque ad florem solitarium bibracteatum reducta, rarius 2-3-flora.*

R. rostrata, *Stapf* (*sp. unica*). *Stolones* longi, graciles. *Folia* conformia ; petiolus ad 8 poll. longus ; lamina subapiculata, basi rotundata vel subcordata, 1–1¼ poll. longa, ¾ ad fere 1 poll. lata, 5-nervis. *Pedunculus* 2 3 poll. longus. *Bracteæ* oblongæ, membranaceæ, basi connatæ. *Pedicelli* ⅓-⅕ poll. longi. *Sepala* late elliptica, obtusa, 2 lin. longa. *Petala* tenuia, obovato-elliptica, 2 lin. longa. *Staminum* filamenta 1 lin. longa ; antheræ ¼-⅜ lin. longæ. *Ovaria* stylo ensiformi longe rostrata. *Carpella* matura oblique ovoidea, abrupte rostrata, circumcirca alata, circiter 1½-1¾ lin. longa, rostro 1–1¼ lin. longo non computato.

Tropical Asia : Malay Peninsula, Selangor, Gua Batu woods, ***H. N. Ridley*, 8464.**

Ranalisma resembles in general habit *Elisma* and *Caldesia* ; but it differs from both in the structure of the mature carpels and in the elongated torus, and from *Elisma* also in the extrorse position of the micropyle. The elongated torus might point to *Sagittaria* and *Lophiocarpus*, but the whole facies of the plant and the absence of any dimorphism in the flowers are against the assumption of a close affinity with those genera. Professor Buchenau, to whom I submitted drawings and fruits of the plant, suggested *Caldesia* as the nearest ally. The name *Ranalisma* is intended to refer to the great resemblance of the flowers and fruits of this plant with those of certain species of *Ranunculus*.—Otto Stapf.

Fig. 1, a flower and bracts ; 2, a stamen ; 3, a young carpel ; 4. section of a fruit ; 5, a carpel ; 6, an embryo.—*All enlarged.*

Plate 2653.

DICHOTOMANTHES TRISTANIÆCARPA, *Kurz*.

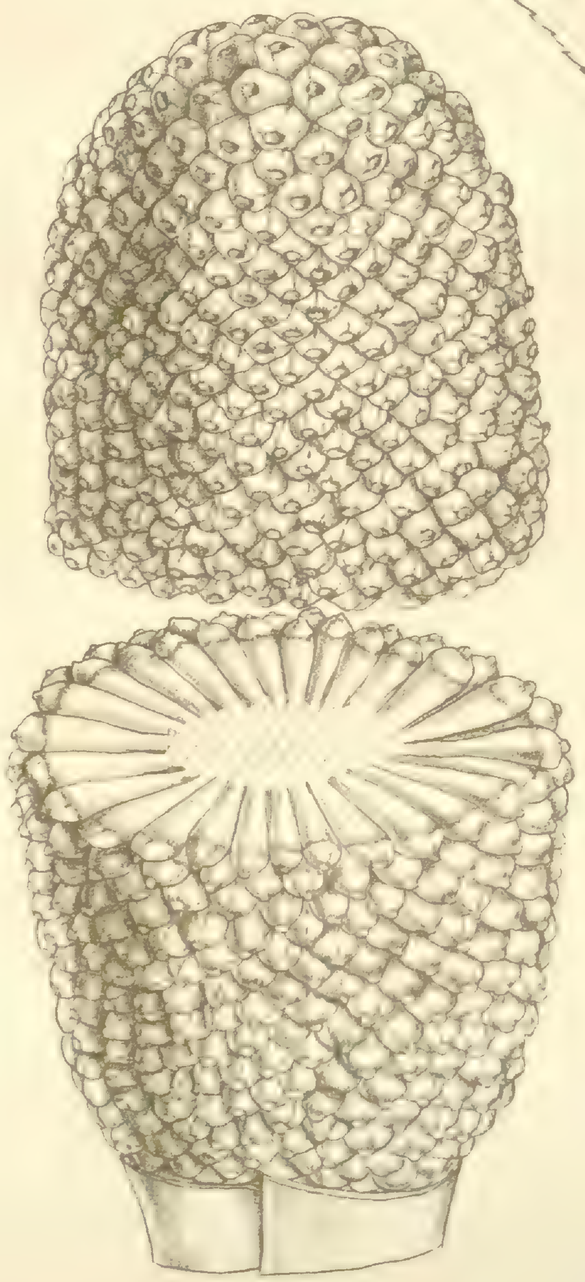
Rosaceæ. Tribe Pruneæ.

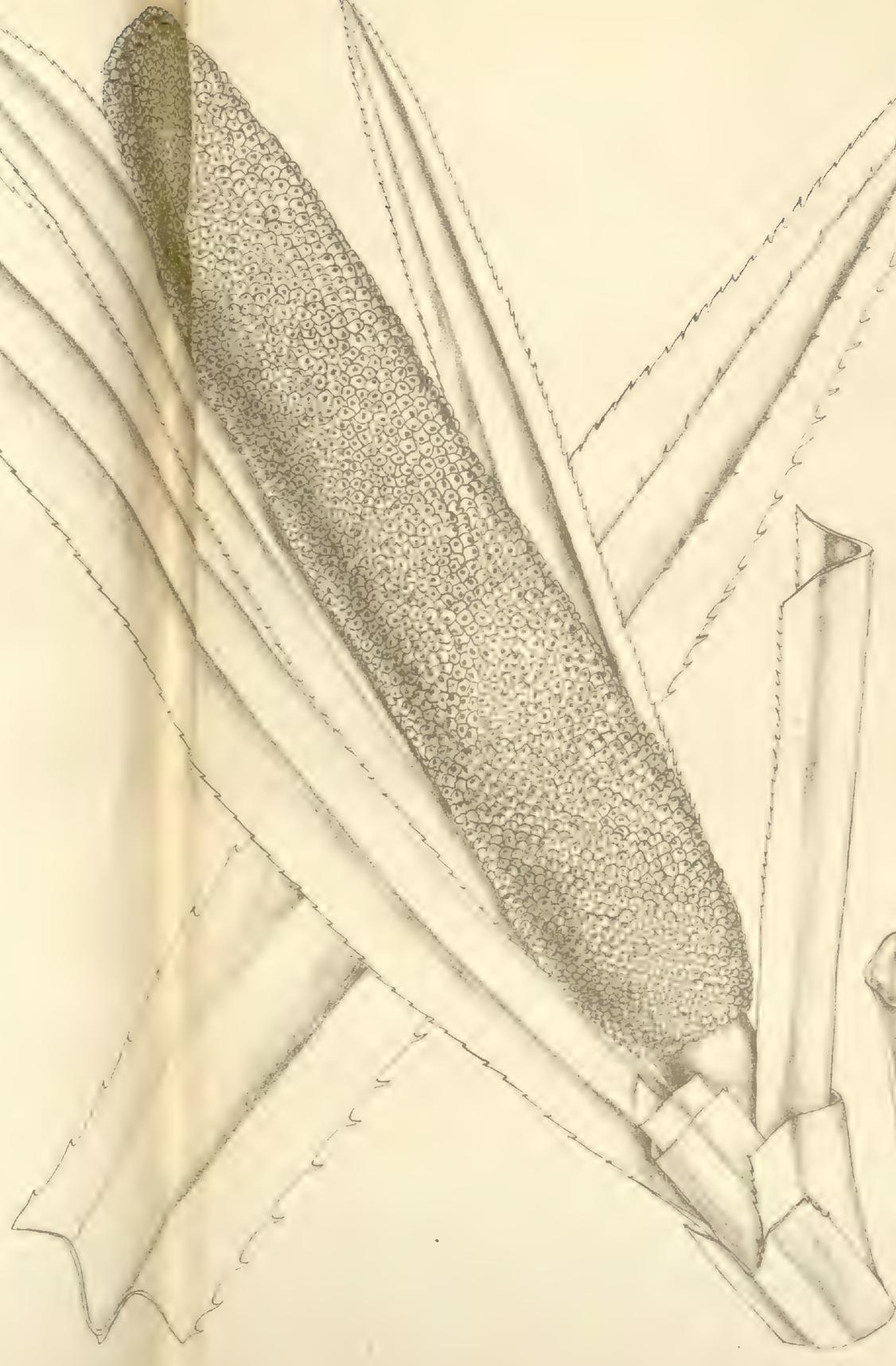
D. tristaniæcarpa, *Kurz in Journ. Bot.* 1873, p. 194, t. 133, f. 2 (*sp. unica*). *Arbor* parva vel frutex 6–15-pedalis, dense ramosus, ramulis floriferis gracilibus primum fulvo-tomentosis. *Folia* brevipetiolata, coriacea, oblongo-lanceolata, interdum obovata, oblanceolata vel elliptica, maxima 4 poll. longa sed sæpius 2–3 poll. longa, utrinque attenuata, apiculata, integra, subtus albido-tomentosa, supra glabra vel glabrescentia nitidaque, venis primariis lateralibus curvatis subtus prominulis; stipulæ minutæ, filiformes, cito deciduæ. *Flores* albi, 3–4 lin. diametro, in cymas corymbosas terminales brevissime pedunculatas 1–2 poll. diametro dispositi. *Calyx* extus lanatus, 5-dentatus, tubo intus hirsutus, fructifer incrassatus, carnosus, glaber, ruber. *Petala* rotundata. *Stamina* 15–20, glabra. *Ovarium* hirsutum, 1-loculare, stylo laterali glabro; ovula 2, collateralia, ascendentia vel fere erecta. *Fructus* (carpellum) siccus, oblongus, vix 3 lin. longus, paullo exsertus, sæpius 1-spermus, pericarpio coriaceo; semen exalbuminosum vel albumine tenuissimo.

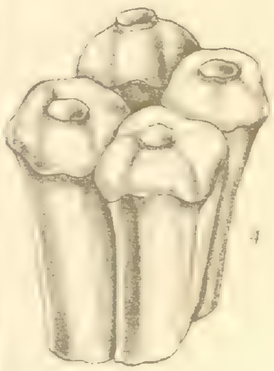
China: Hotha, Yunnan, *D. J. Anderson*; Mengtze, Yunnan, at 5000 to 6000 feet, *W. Hancock*, 276; the same locality, *A. Henry*, 9367, 10255.

This very distinct genus was referred by Kurz to the Lythraceæ, but when I had to deal with it (*Journ. Linn. Soc.* xxiii. p. 307) I was able to indicate its real affinity, and now, with copious specimens from Mr. Hancock and Dr. Henry, there is no doubt that it should be placed near *Pygeum*. The fleshy calyx of the fruit, the dry carpel, and ascending ovules are characteristic.—W. Botting Hemsley.

Fig. 1, part of calyx and pistil; 2, a petal; 3, section of ovary; 4, cluster of drupes; 5, a fruit from which a part of the calyx has been removed; 6, cross section of carpel; 7, embryo.—*All except 4 enlarged.*







M. S. del. et Lith.

Plate 2654.

PANDANUS COMINSII, *Hemsl.*

PANDANACEÆ.

P. Cominsii, *Hemsl.* (*sp. nov.*); inter species carpellis angustis liberis ob syncarpium solitarium elongatum cylindricum insignis.

Folia ad basin inflorescentiæ femininæ 2-4 ped. longa et 2–2½ poll. lata, complicata, acuta, margine serrato-aculeolata, supra prope apicem secus costas duas laterales aculeolata, subtus secus costam centralem aculeolata. *Syncarpium* (*spadix*) brevissime pedunculatum, erectum, solitarium, cylindricum, circiter 1 ped. longum et 2-2½ poll. latum. *Carpella* permulta, libera, 6–8 lin. longa, 1½ lin. diametro.

SOLOMON ISLANDS: Mouth of creek, Siota, Florida Island, *Comins*, 363.

For this and so many other novelties from the Solomon Islands, Kew is indebted to the Venerable Archdeacon Comins. He does not give dimensions, but notes that most of the native mats are made from the leaves of this screw-pine.—W. BOTTING HEMSLEY.

Fig. 1, female inflorescence and foliage, *half natural size*; 2, tip of leaf, *natural size*; 3, basal and apical portions of female inflorescence, *natural size*; 4, carpels, *enlarged*; 5, section of a carpel, *enlarged*.

Plate 2655.

IMPATIENS GRANDIFLORA, *Hemsl.*

Geraniaceæ. Tribe Balsamineæ.

I. grandiflora, *Hemsl.* (*sp. nov.*); species magnitudine florum insignis.

Herba erecta, saltem bipedalis, glabra, caule subsimplici crasso. *Folia* alterna, petiolata, subcarnosa, oblongo-lanceolata, cum petiolo usque ad 6 poll. longa, acute acuminata, apiculato-crenata vel glanduloso-crenata, venis primariis valde curvatis in crenas excurrentibus, petiolo glandulifero. *Flores* speciosi, cum calcare 4 5 poll. longi, in axillis foliorum superiorum solitarii vel geminati, graciliter pedicellati, pedicellis quam foliis brevioribus basi bracteis parvis munitis. *Sepala* 3, lateralia late ovata, acuminata, posticum in calcar gracile curvatum productum. *Petala* lateralia obliqua, alte bifida, segmentis bilobulatis vel emarginatis anterioribus longioribus. *Capsula* matura non visa, ut videtur clavata.

Madagascar: without special locality, *Warpur.*

Impatiens grandiflora, Hemsl., is one of many instances of unusually large flowers for the genus in the Madagascar Flora. *Ixora siphonantha*, Oliver, of this work, plate 2236, having flowers eight inches long, is another.—W. Botting Hemsley.

Fig. 1, androecium; 2, pistil.—*Both enlarged.*

BM 26656

Plate 2656.

BEGONIA WARPURI, *Hemsl.*

Begoniaceæ.

B. Warpuri, *Hemsl.* (*sp. nov.*) ; species ex affinitate *B. nanæ*, L'Hér., a qua differt foliis paucidenticulatis nec ciliato-serratis.

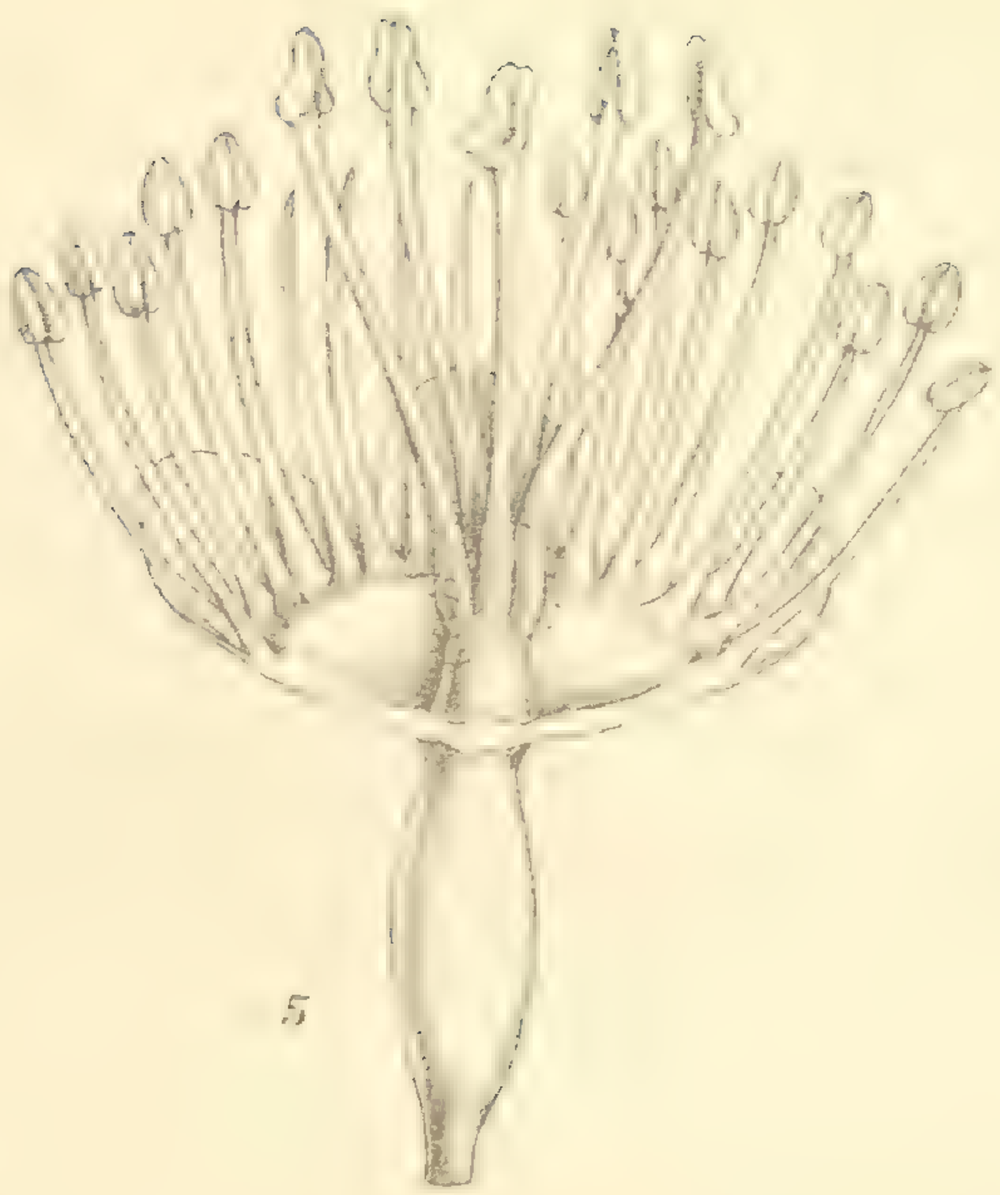
Herba perennis, tuberosa, acaulis, glabra. *Folia* pauca, longe graciliterque petiolata, subcarnosa, anguste lanceolata, cum petiolo 3–4 poll. longa, utrinque attenuata. *Scapi* graciles, folia subæquantes, androgyni, circiter triflori. *Perianthium* 4–6-phyllum, segmentis ovali-oblongis 3–4 lin. longis. *Stamina* circiter 10, breviter monadelpha. *Styli* 3, liberi, stigmatibus lunatis. *Capsula* longe 1-alata, ala oblonga, 3-locularis, polysperma, placentis brevibus indivisis.

Madagascar : without special locality, *Humblot*, 565 ; *Warpur*.

This belongs to an imperfectly known section named *Erminea* by De Candolle (*Prodr.* xv. 1. p. 393), comprising two other species figured by L'Héritier (*Stirpes Novæ*, tt. 47, 48), the placentation of which is unknown. Both are natives of Madagascar.—W. Botting Hemsley.

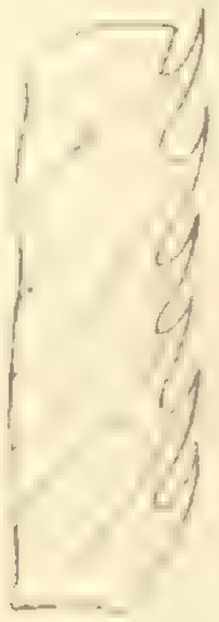
Fig. 1, androecium ; 2, pistil ; 3, fruit ; 4, cross section of the same.—*All enlarged.*

9

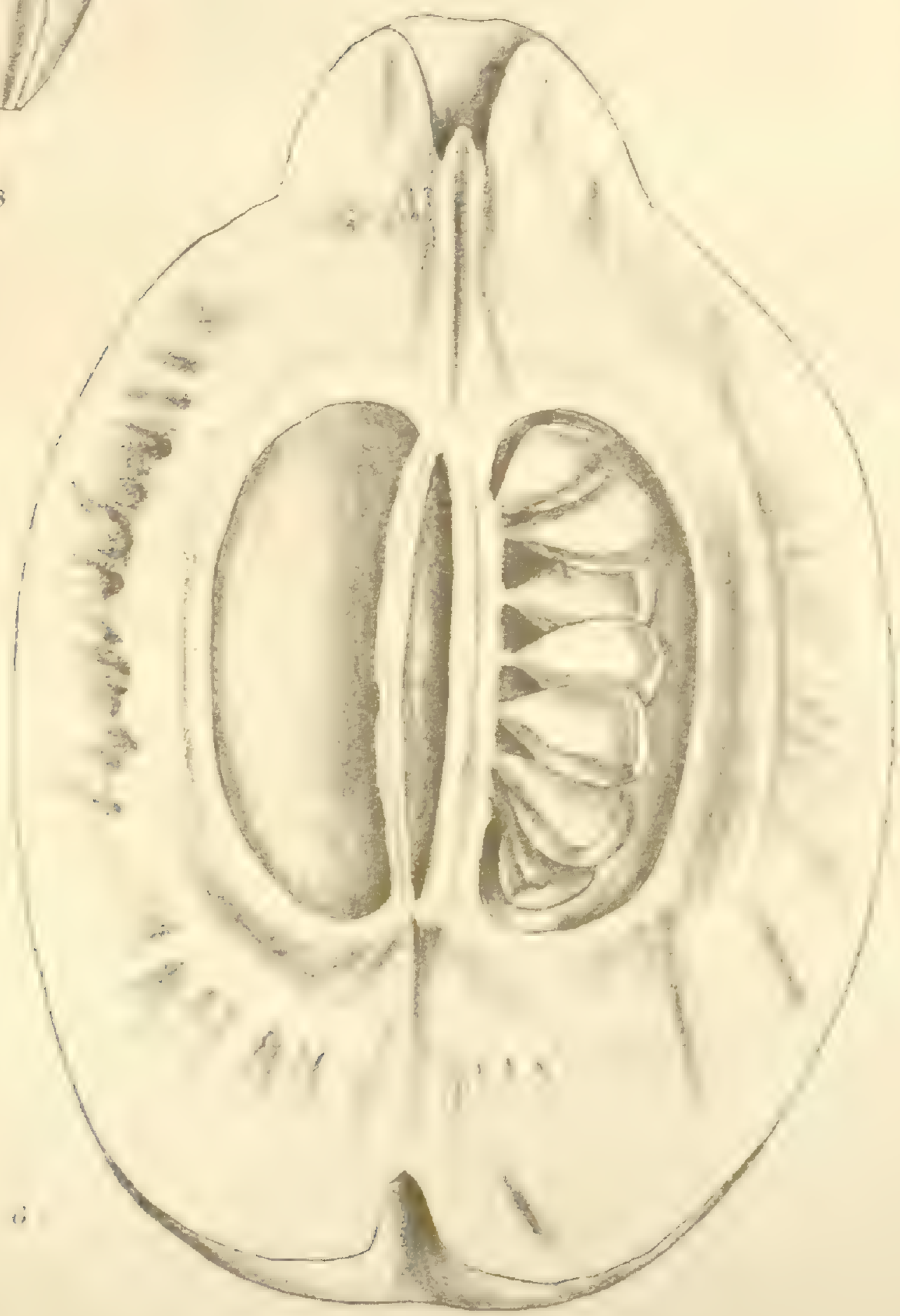


5

7



8



6

1

Plates 2657 and 2658.

CYDONIA CATHAYENSIS, *Hemsl.*

Rosaceæ. Tribe Pomeæ.

C. cathayensis, *Hemsl.* (*sp. nov.*); foliis lanceolatis eglandulosis, calycis lobis rotundatis erectis, fructu minore a *C. sinensi*, Thouin, differt.

Frutex dense ramosus, spinosus; rami tortuosi, rigidi, spinis rectis validis armati, vel rami steriles interdum inermes. *Folia* distincte petiolata, subcoriacea, lanceolata vel lineari-lanceolata, cum petiolo 2–5 poll. longa, acuta, basi cuneata, crebre minuteque serrata, primo præcipue subtus ferrugineo-pubescentia dein glabrescentia; stipulæ variabiles, nunc parvæ, nunc amplæ, foliaceæ, auriculiformes, serrulatæ. *Flores* brevissime pedicellati, fasciculati, pauci aggregati, circiter 1½ poll. diametro. *Calyx* glaber, lobis subcarnosis latis rotundatis erectis eglandulosis. *Petala* fere orbicularia. *Stamina* numerosa, quam petala breviora. *Styli* 5, quam stamina longiores, infra medium pilosi. *Fructus* ovoideus vel fere cylindricus, basin versus abrupte constrictus, 6–7 poll. longus, 5-locularis; semina numerosa, cuneiformia, horizontalia.—*Pyrus cathayensis*, Hemsl. in Journ. Linn. Soc. xxiii. p. 256, excl. synon.

China: Changyang and Ichang, Hupeh, *A. Henry*, 1916, 5263.

Dr. Henry's specimens of this quince are the only ones Kew possesses from China, and he notes that he had never met with it in an undoubtedly wild state. It has been cultivated at Kew for twenty years at least; but the history of its introduction is not known, and until the Director brought specimens last year of the fruit of the true *C. sinensis*, Thouin (*Ann. Mus. Hist. Nat. Par.* xix. 1812, p. 144, tt. 8 et 9; *Bot. Reg.* t. 905; *Rev. Hort.* 1889, p. 228, cum ic. color.) from the garden of the Commendatore Hanbury, at La Mortola, it bore the name of *C. sinensis*. A more detailed history of the cultivation and synonymy of the two species will appear in the *Kew Bulletin*. The Kew Herbarium contains specimens of *C. sinensis*, Thouin, cultivated in Paris in 1815; a cultivated specimen from Seringe, without any particulars; and a cultivated specimen from Kiukiang, communicated by Dr. Shearer in 1875.—W. Botting Hemsley.

Plates 2657–8. fig. 1, a barren shoot; 2, a flowering shoot; 3, inflorescence; 4, part of margin of a leaf; 5, section of a flower; 6, section of a fruit; 7 and 8, seeds; 9, embryo.—*Figures* 4, 5, 6, 8, *and* 9 *enlarged.*

Plate 2659.

LIGHTFOOTIA LEPTOPHYLLA, *C. H. Wright.*

Campanulaceæ. Tribe Campanuleæ.

L. leptophylla, *C. H. Wright* (*sp. nov.*) ; ad *L. capitatam*, Baker, accedit, ramis minute pubescentibus, foliis majoribus tenuioribusque, capitulis bracteis foliis similibus cinctis prima facie distinguenda.

Herba gracilis, multiramosa, 15 poll. alta. *Rami* teretes, minute pubescentes, pallide straminei. *Folia* lanceolata, serrata, apice acuta vel subobtusa, basi attenuata, subsessilia, utrinque sparse albo-pilosa vel tandem subglabra, 2 poll. longa, 4 lin. lata. *Capitula* sæpius terminalia, multiflora, 9 lin. diam. ; bracteæ involucrantes 4–8, foliis omnino similes ; bracteolæ subulatæ, floribus paullo breviores. *Calycis* lobi subulati, ciliati, $1\frac{1}{2}$ lin. longi. *Corolla* purpurea, fere ad basin 5-partita ; lobi ligulati, $2\frac{1}{2}$ lin. longi. *Stamina* calycis lobis subæquilonga ; filamenta ensiformia e basi rhomboidea intus papillosa ; antheræ oblongæ. *Ovarium* 3-loculare ; stylus corollam superans, apice incrassatus papillosusque ; stigma minute 3-lobum.

Portuguese East Africa : near water on hills between Unangu and Lake Shiré, *W. P. Johnson*, 40.

In general appearance this plant approaches *Jasione*, a genus which has not yet been found south of the Tropic of Cancer. Its large thin leaves and capitate inflorescence, surrounded by leaf-like bracts, render it easily distinguishable from its congeners. —C. H. Wright.

Fig. 1, a flower-bud; 2, an expanded flower; 3, a stamen, front view; 4, the same, back view; 5, transverse section of ovary.—*All enlarged.*

Pl. 2660

Plate 2660.

MELINIS TENUISSIMA, *Stapf.*

Gramineæ. Tribe Paniceæ.

M. tenuissima, *Stapf* (*sp. nov.*); a *M. minutiflora*, Beauv., differt spiculis minoribus, gluma superiore truncata, tenuissime (nec prominenter) 7-nervi, valva inferiore (sterili) 3-nervi, superiore (fertili) quam palea distincte minore.

Gramen 2-3 ped. altum, perenne (?). *Culmi* tenues, multinodi, e basi decumbente ascendentes, inferne ramos perlongos erectos edentes, læves, glabri, internodiis e vaginis exsertis. *Foliorum* vaginæ arctæ, striatæ, teretes, sparse vel ima basi densius pilosæ, pilis sæpe tuberculis minutis impositis; ligulæ ad seriem brevium pilorum redactæ; laminæ lineari-lanceolatæ, longe et tenuiter acutatæ, patulæ, 2-3 poll. longæ, 1½-2½ lin. latæ, rigidulæ, glabræ, præter margines scaberulos læves. *Panicula* oblonga vel ovoidea, laxa, erecta, circiter 6 poll. longa; rhachis tenuis, lævis; rami 2-3-nati, tenuiter filiformes, ad nodos pilosi, læves; ramuli pedicellique tenuissime capillares, hice infra apicem incrassatam pilis 1-1½ lin. longis argenteo-nitentibus muniti, plerique 1½-2 lin. longi. *Spiculæ* pallide virides, oblongæ, ¾ lin. longæ. *Gluma* inferior ad squamam annuliformem redacta; superior late oblonga, truncata, superne minutissime puberula et insuper apice pilis longioribus instructa, tenuiter 5-7-nervis. *Valva* inferior vacua, anguste oblonga, breviter bifida, e sinu aristata, glumam superiorem æquans, 3-nervis, apicem versus pilosula, arista tenuissima flexuosa 1 lin. longa; superior oblonga, obtusa, ½ lin. longa, hyalina, 1-nervis. *Palea* late oblonga, truncata, obscure 2-nervis, quam valva superior major, ¾ lin. longa. *Lodiculæ* subquadratæ, minutæ. *Antheræ* ⅝ lin. longæ.

South Africa: Nyasaland, Namasi, *K. J. Cameron*, 33.

A specimen collected by Schimper in Abyssinia, probably in Begemeder, No. 1410 of the '1863 8' collection, represents, as it seems, a variety of the species described above. It may be characterised thus:—

Var. abyssinica, *Stapf.* *Panicula* angusta, 4 poll. longa; ramuli pedicellique breviores. *Valva* inferior 5-, superior obscure 3-nervis. *Antheræ* ½ lin. paululo longiores.—O. Stapf.

Fig 1, a pedicel; 2, a spikelet with the anthers fallen; 3, lower glume; 4, upper glume; 5, lower valve; 6, fertile floret; 7, its valve; 8, its pale; 9, lodicule. *All enlarged.*

M S del.et lith

Plate 2661.

QUERCUS EDITHÆ, *Skan.*

Cupuliferæ.

Q. (§ **Cyclobalanopsis**) **Edithæ**, *Skan* (*sp. nov.*) ; *Q. semiserrata*, Roxb. valde affinis, differt foliis semper obtusis, nucibus longioribus angustioribusque.

Arbor 30 ped. alta (fide *Ford*). *Ramuli* juniores primo ferrugineo-tomentosi, citissime glabrescentes, minute lenticellosi. *Folia* elliptica vel elliptico-oblonga, adulta 3-5½ poll. longa, 1¼–2¼ poll. lata, petiolata, superne crenato-serrata, basin versus integerrima vel repanda, apice brevissime acuminata, obtusa, basi cuneata, primo infra ferrugineo-tomentosa, undique cito glabrescentia, supra nitida nervis planis, infra costa et venis primariis lateralibus validis utrinque 9–10 distincte elevatis ; petioli ¾–1 poll. longi. *Fructus* juniores 3-4, maturi solitarii vel 2 in pedunculo valido sæpissime petiolis breviore. *Involucrum* cupuliforme, 6 lin. longum, 9-11 lin. diametro, intus præsertim ferrugineo-tomentosum, bracteis in laminas 6-8 annulares concentricas inferiores subintegras superiores crenatas connatis. *Nux* oblonga, 1½–1¾ poll. longa, præsertim circum basin adpresse tomentosa, breviter apiculata.

China : new British territory on mainland opposite Hongkong, near Tatitin, at 500 feet above sea-level, *Ford*, 623.

An examination of further material of this oak, remarkable among Chinese species on account of its long acorn, may determine that it is a variety of *Quercus semiserrata*, Roxb. The acorns of that species in the Kew Herbarium are never so long, and usually scarcely more than half as long, as those of *Q. Editha* ; but it appears to be extremely variable both in fruit and foliage. *Q. Editha* is named after Lady Blake, the wife of Sir Henry Blake, G.C.M.G., Governor of Hongkong.—S. A. Skan.

4

3

1

2

M.S. del. et lith.

PLATE 2662.

QUERCUS BLAKEI, *Skan.*

CUPULIFERÆ.

Q. (§ **Cyclobalanopsis) Blakei,** *Skan (sp. nov.)*; ad *Q. Edithæ*, Skan, maxime accedit, differt foliis angustioribus tenuioribusque, involucris patelliformibus, nucibus brevioribus crassioribusque.

Arbor 30 ped. alta (fide *Ford*), ramulis foliisque tantum visis glaberrimis. *Ramuli* juniores graciles, teretes, inconspicue lenticellosi. *Folia* oblongo-lanceolata, $3\frac{1}{2}$–7 poll. longa, $1\frac{1}{4}$–2 poll. lata, utrinque sensim angustata, apice breviter acuminata, superne undulato-serrata, infra medium integerrima vel leviter repanda, costa et venis primariis lateralibus utrinque circiter 14 supra planis, infra distincte elevatis; petioli graciles, $\frac{3}{4}$–1 poll. longi, semiteretes, basi incrassati. *Flores* desunt. *Fructus* in pedunculo petiolis multo breviore apice valde incrassato. *Involucrum* patelliforme, 1 poll. latum, intus dense ferrugineo-tomentosum, extus subtiliter pubescens, bracteis in laminas 6–7 annulares concentricas integras connatis. *Nux* elliptico-globosa, 12–14 lin. longa, subtiliter adpresse tomentosa, passim cito glabrescens, breviter apiculata.

CHINA: New British territory on mainland opposite Hongkong, near Tatitin, at 500 ft. above sea-level, *Ford*, 622.

Q. Blakei is easily distinguished from all the previously described Chinese species of the section *Cyclobalanopsis* by the broad, shallow cupule. It is named after the distinguished Governor of Hong Kong, Sir Henry Blake, G.C.M.G., from whom botanical investigations in the colony have received constant support and encouragement.—S. A. SKAN.

Figs. 1 to 4, acorns and cupules in different positions. *Natural size.* The shallowness of the cupules is not represented so distinctly as it might have been.

Plate 2663.

QUERCUS REX, *Hemsl.*

Cupuliferæ.

Q. (§ **Cyclobalanopsis**) **Rex**, *Hemsl.* (*sp. nov.*); ad *Q. velutinam*, Lindl., accedit sed omnibus partibus minoribus, foliis anguste oblongo-lanceolatis, nuce apice haud excavata.

Arbor 60-pedalis (fide *Henry*) ramulis floriferis graciliusculis glabris cinereis egregie lenticellatis. *Folia* ad apices ramulorum conferta, juvenilia omnino densissime fulvo-tomentosa, matura supra demum glabra nitidaque, subtus etiam glabra glaucaque, distincte petiolata, coriacea, lanceolata, oblongo-lanceolata vel oblanceolata, maxima (in ramulis floriferis) circiter 10 poll. longa, acuminata sed vix acuta, basi cuneata, supra medium minute serrata; venæ primariæ laterales numerosæ, angulo acuto excurrentes, per totam longitudinem fere rectæ, supra impressæ, subtus elevatæ; petioli 9–12 lin. longi, crassi, tomentosi; stipulæ lineares, fere pollicares, citissime deciduæ. *Amenta* masculina circiter 3 aggregata, subterminalia, tenuia, flexilia, pendula, 3–6 poll. longa. *Perianthium* florum masculinorum alte 6-lobatum, lobis patentibus rotundatis. *Stamina* 6, filamentis glabris, antheris pilis paucis obsitis. *Flores* feminini ignoti. *Fructus* delapsus tantum visus, 2–2½ poll. diametro. *Involucrum* late cupuliforme, fulvo-tomentosum, bracteis in laminas 6–7 annulares concentricas irregulariter dentatas connatis. *Nux* ossea, depresso-globosa, apice excavata, e cupula semi-exserta. *Semen* unicum, cotyledonibus sinuato-lobatis.

China: Szemao, Yunnan, at 4000 ft., *A. Henry*, 12665.

This very handsome oak is similar to the Himalayan *Q. lamellosa*, Sm., but that has coarsely serrate leaves, and relatively small, ovoid acorns, more than two-thirds immersed in a very thick, lamellate cup. It is, however, more closely allied to *Q. velutina*, Lindl., but the differences are more easily seen than described. Apart from the smaller size, the leaves of *Q. velutina* are thicker and harder in texture, broadest below the middle, and have fewer primary veins. In both *Q. Rex*, Hemsl., and *Q. velutina*, the young leaves are densely clothed with a woolly tomentum, and become quite glabrous with age. Flowering branchlets bear leaves in both conditions as shown in the plate. A parallel to this is exhibited by the tropical South American *Connarus erianthus*, Benth. It is difficult to say what benefit plants, under such widely different conditions, derive from this covering.—W. Botting Hemsley.

Fig. 1, a bract from a male catkin; 2, a male flower; 3, a fruit; 4, a nut; 5, cross section of the same; 6 and 7, embryo in different positions; 8, radicle.—Figures 1, 2, and 8 *enlarged*; the rest *natural size*.

4

6

1

3

2

7

5

M.S. del. et lith.

Plate 2664.

QUERCUS FORDIANA, *Hemsl.*

Cupuliferæ.

Q. (§ **Pasania**) **fordiana**, *Hemsl.* (*sp. nov.*) : species *Q. corneæ*, Lour., proxima, differt imprimis foliis subtus pubescentibus margine serrulatis, **venis primariis lateralibus multo numerosioribus.**

Arbor 10–30 pedalis (fide *Henry*), ramulis floriferis fructiferisque graciliusculis pubescentibus. *Folia* distincte petiolata, coriacea, oblongo-lanceolata vel oblanceolata, cum petiolo usque ad 8 poll. longa, sed sæpius breviora, acute acuminata, basi cuneata vel rotundata, supra præter costam impressam pubescentem glabra, subnitida, subtus diuturne pubescentia, mollia, margine præcipue supra medium serrulata ; venæ primariæ laterales utrinque 17–25, fere rectæ, in serraturas excurrentes, supra impressæ subtus elevatæ ; petioli graciliusculi, $\frac{1}{2}$–1 poll. longi, pubescentes ; stipulæ minutæ, cito deciduæ. *Amenta* masculina plura in axillis foliorum superiorum vel subterminalia, fasciculata, erecta, $1\frac{1}{2}$–$2\frac{1}{2}$ poll. longa. *Perianthium* florum masculinorum 6-partitum, segmentis ovalibus. *Stamina* 12, glabra, filamentis filiformibus perianthium longe excedentibus. *Flores* feminini (juveniles non visi) plures fasciculati. *Fructus* sessilis, 1–$1\frac{1}{4}$ poll. diametro. *Involucrum* hemisphæricum vel ultra medium productum, glabrescens ; bracteæ multiseriatæ, triangulares, demum confluentes, marginibus elevatis, regulariter insculptæ, superiores apiculatæ. *Nux* ossea, depresso-globosa, spurie subplurilocellata, unde seminis cotyledones plurilobatæ.

China : Szemao, Yunnan, at 4000 to 5000 ft., *A. Henry*, 12054, 12054 A, 12054 B, and 12054 C.

This is one of several species of *Quercus* inhabiting South China and Cochin China, belonging to a group characterised by having a very thick, hard pericarp, with ingrowths into the cell-cavity, nearly dividing it into separate cells, and causing the cotyledons to become lobed as in the walnut.—W. Botting Hemsley.

Fig. 1, portion of the margin of a leaf; 2, a male catkin; 3, a bract; 4, a male flower; 5, female flowers in a somewhat advanced stage; 6, section of one of the same; 7, cross section of a nut.—*All except 7 enlarged.*

7

8

5

6

4

3

1

2

Plate 2665.

QUERCUS CORNEA, *Lour.*

Cupuliferæ.

Q. cornea, *Lour. Fl. Cochinch.* p. 572 ; *DC. Prodr.* xvi. i. p. 90 ; *Seem. Bot. Voy. 'Herald,'* p. 413 t. 87 ; *Benth. Fl. Hongk.* p. 322 ; *Q. hemisphærica, Drake in Journ. de Bot.* 1890, p. 151, t. 3, f. 4.

China : Hongkong, various collectors ; Hainan, *B. C. Henry* ; Tonkin, *Balansa*, 2364, 2369 (*hemisphærica*), *Balansa*, 568, 2367, 2368 (*cornea*).

The fruit, and more especially the seed, of this species had not previously been adequately figured. Lindley (*Nat. Syst. Bot.* ed. 2, p. 441) made a separate genus—*Synædrys*—of it, on account of the 'glans ossea, intus semiquinquelocularis seminis cotyledonibus in tot lobos divisis quot loculi, more Juglandis.' As explained under Plate 2664, there are several species of this group in Eastern Asia, and it is a little uncertain whether this is really Loureiro's plant, because his description is insufficient. But, as it has been accepted by Bentham, Seemann, and A. De Candolle, and as there is not, so far as I can ascertain, any specimen in existence to settle the point, we may adopt the name. With a considerable series of specimens before me, I have no hesitation in treating *Q. hemisphærica* Drake as the same species as *Q. cornea*, Lour., and the author agrees with me after seeing the Kew specimens. The acorns from different sources exhibit considerable variation, but not more than those of the common oak. They are edible and commonly offered for sale in the markets of South China. Mr. C. Ford, the Superintendent of the Hongkong Botanic Garden, who recently sent a fine sample of the acorns, says that their flavour is not unpleasant, and that they are certainly the most palatable of any acorn he had tasted. He further states that *Q. cornea* fruits sparingly in *Hongkong*, and that the acorns sold in the markets are said to come from the province of Kwangsi, to the west of Canton ; but he never saw the tree in sufficient abundance either in Kwantung or Kwangsi to supply the quantities seen in the markets.—W. Botting Hemsley.

Fig. 1, a fruit ; 2, a portion of the top of a fruit and the marginal series of bracts ; 3, vertical section of a nut removed from the involucre or cup ; 4, cross section of a nut near the top ; 5 cross section of the same near the base ; 6, cross section of an empty nut near the base showing the ingrowths of the endocarp ; 7 and 8, an embryo in different positions.

M. S. del. et sc.

Plate 2666.

MONADENIUM ECHINULATUM, *Stapf*.

(*with a cyathium of* M. læve, *Stapf*).

EUPHORBIACEÆ. Tribe EUPHORBIEÆ.

M. echinulatum, *Stapf*, a specie unica hucusque nota aculeis in omnibus partibus præsentibus, cyathio latiore, glandula multo minus producta diversa.

Radix tuberosa. *Caulis* erectus, succulentus, aculeolatus, circiter 1 ped. altus. *Folia* breviter petiolata, obovata, acuta, basi cuneata, ad 3 poll. longa, ad $1\frac{1}{2}$ poll. lata, carnosa, supra lævia glabraque, infra et in marginibus aculeolata ; petiolus crassus, ad 6 lin. longus. *Inflorescentiæ* axillares e dichasiis primo nutantibus aculeolatis compositæ, pedunculo crasso 1 poll. longo suffultæ ; bracteæ late rotundatæ, apiculatæ vel truncatæ, uno latere liberæ, altero fere tota longitudine connatæ, carnosulæ, nervis saturate viridibus notatæ, ad 4 lin. longæ, ad 6 lin. latæ. *Cyathium* subsessile, subglobosum, 2 lin. longum, læve, uno latere ad medium fissum, 5-lobum, lobis membranaceis albis glabris fimbriato-laceratis incurvis inæqualibus glandula subannulari crassa integra circumdatis et superatis. *Flores* ♂ in cincinnos circiter 5-floros cyathii lobis oppositos dispositi, calyce destituti ; bracteolæ fimbriatæ cum cyathii tubo et inter se alte connatæ involucelli more flores ♂ cingentes. *Flos* ♀ e cyathii fissura exsertus, nutans, calyce bracteisque destitutus ; ovarium 3-sulcatum, glabrum.

TROPICAL WEST AFRICA. Described from a living plant communicated by Mr. *F. Sander*.

Monadenium was described by Professor Pax in Engler's *Bot. Jahrb.* xix. p. 126, from flowers and fruits, collected by Fischer in East Africa. It differs from *Synadenium* in the zygomorphism of the cyathium and the usually much more developed cyathial gland, which in this species as in *M. coccineum*, Pax, exceeds considerably the lobes of the cyathium. A third species was collected by A. Whyte in Nyasaland. It may be described as follows :

M. læve, *Stapf*; a *M. echinulata* absentia aculeolorum, bracteis majoribus minus alte connatis, glandulæ margine recurvo cyathii lobos æquante diversa.

Folia breviter petiolata, obovato- vel elliptico-lanceolata, acuta, basi longe attenuata, ad 6 poll. longa, 2 poll. lata, glabra, lævia. *Inflorescentiæ* dichotome compositæ, densiusculæ ; pedunculus 2–4 poll. longus ; bracteæ late rotundatæ, obtusissimæ, uno latere liberæ, altero ad $\frac{2}{3}$ connatæ, nervis saturate viridibus notatæ, ad 6 lin. longæ. *Cyathium* subsessile, subglobosum, $1\frac{1}{2}$ lin. longum, læve, uno latere ad medium fissum, 5-lobum, lobis membranaceis denticulatis glabris inæqualibus glandula subannulari margine integro recurvo circumdatis et æquatis. *Flores* ut in M. echinulato. *Capsula* oblongo-globosa, 2–3 lin. longa, lævis. *Semina* dense verruculis albis obsita.

British Central Africa. North Nyasaland, between Kondowe and Karonga, at 2000-3000 ft., *Whyte*.

The general appearance of the inflorescence of *M. læve* is rather similar to that of certain species of the section *Tithymalus* of *Euphorbia*, on account of the large involucral bracts.—Otto Stapf.

Fig. 1, cyathium of *M. echinulatum* ; 2, diagram of the same ; 3, part of the cyathium, seen from within ; 4, a cyme of male flowers ; 5, fimbriate radial bract. *All enlarged.* Fig. 6, cyathium of *M. læve*.– *Enlarged.*

M.S. del. et lith.

O.Stapf anal.

Plate 2667.

ALLOSPONDIAS LAKONENSIS, *Stapf.*

ANACARDIACEÆ. Tribe SPONDIEÆ.

Allospondias, *Stapf* (*gen. nov.*). *Flores* hermaphroditi (vel polygami ?). *Calyx* parvus, 4 5-lobatus, lobis brevibus late triangularibus. *Petala* 4 5, lineari-oblonga, subacuta, recurva, æstivatione valvata. *Stamina* 8–10, æqualia, sub disco inserta ; filamenta subulato-filiformia ; antheræ lineari-oblongæ, versatiles, rimis longitudinalibus lateraliter dehiscentes. *Discus* annularis, obscure crenulatus. *Ovarium* subglobosum, basi disco cinctum, 4 5-loculare ; ovula in loculis solitaria, pendula, micropyle supera. *Styli* 4-5, crassiusculi, in carpellorum dorso decurrentes, superne conniventes ; stigmata brevia, obliqua. *Drupa* mesocarpio carnoso ; putamen lignosum, 4–5-gonum, 4 5-loculare, lateribus magis minusve depressis et linea tenui prominente longitudinali percursis, angulis apice in lobulos vel cornua brevia productis, superficie tota tenuiter fibrosa ; loculi monospermi, angusti, erecti, crucis vel stellæ modo dispositi, cum lacunis amplis resiniferis alternantibus, substantia loculos et lacunas includente ad parietes subtenues redacta. *Semina* oblonga ; testa membranacea. *Embryo* rectus, cotyledonibus plano convexis, radicula brevissima, supera.—Arbor *mediocris*. Folia *impari pinnata, plurijuga ; foliola petiolulata, terminali excepto magis minusve inæquilatera, acuminata, nervo collectivo marginali tenuissimo vel obscuro.* Flores *parvi, pedicellati, in paniculam majusculam dispositi.*

A. lakonensis, *Stapf* (*sp. unica*). *Arbor* 10–20 ped. alta. *Ramuli* floriferi 2–3 lin. crassi, molliter tenuissime pubescentes, cinereo-fusci. *Folia* 1–1½ ped. longa, 8 12-juga ; petiolus communis basi 1½ 2 lin. crassus, molliter tenuissime pubescens ; foliola petiolulo 1–1½ lin. longo suffulta, plerumque subopposita vel superiora alternantia, lateralia oblique oblonga, acuminata, basi oblique subacuta, 3 3½ poll. longa, fere 1 poll. lata, summum symmetricum ad 1¼ poll. latum, omnia membranacea, exsiccando fuscescentia, supra primo puberula, mox glabrata, infra ad nervos venasque puberula et insuper secundum nervum medium nec non alibi pilis tenuissimis rigidulis aspersa, nervis secundariis utrinque 9–10 obliquis prorsus curvatis, nervo marginali collectivo tenuissimo sæpe obscuro. *Panicula* axillares, ambitu ovatæ, laxe ramosæ, 6–8 poll. longæ, 4 6 poll. latæ, tenuissime griseo-

pubescentes, pedunculo rhachique petiolo similibus, illo 3–4 poll. longo ; rami inferiores 2–4 in. longi, omnes patuli, a medio vel paulo infra ramulosi ; bracteæ minutæ, subulatæ ; pedicelli graciles, ad 1½ lin. longi, prope basin articulati. *Flores* versus ramulorum apices congesti. *Calyx* pubescens, ¼ lin. longus, ad medium 5-lobatus. *Petala* alba, 1 lin. longa, ⅔ lin. lata. *Antheræ* ½ lin. longæ. *Ovarium* cum stylis ⅔ lin. longum. *Putamen* 4–5 lin. longum, 3–3½ lin. latum. *Spondias? lakonensis*, Pierre, Fl. Cochinch. t. 375.

Indo-China : Siam, Mekong valley near Lakon, *Harmand*, *Herb. Pierre*, 1825. Tonkin, Hanoi, cultivated in the squares and streets, *Balansa*, 4036, 4612.

This plant was made the type of a new section *Allospondias* of the genus *Spondias* by Pierre, l.c. The author, who did not know the fruit, remarked, however, that it differed in certain characters from *Spondias*, and that it might have to be referred to a new genus when the fruit should be known. The Kew collections do not contain complete fruits, but several stones (putamina) deprived of their fleshy covering, which is, according to Balansa, edible. The structure of those stones with their large cavities occupying the angles and much wider than the seed-containing cells, with their considerably reduced stony substance, and the absence of the terminal pits so characteristic of *Spondias*, appear, in connection with the thin leaflets and their nervation, to justify the raising of the section *Allospondias* to generic rank. Dr. Pierre, to whose kindness we owe a specimen of the type of his *Spondias lakonensis*, has confirmed this view after having seen a sketch of the fruit which I had sent to him. There are large resin canals in the decurrent parts of the styles in the ovaries, and therefore outside the ovary cells and in their median line, whilst no trace of them is to be seen in the stone ; on the other hand, fine resin canals occur between the cells, and these may possibly give rise to the large cavities of the endocarp. The resinous solution in these was, of course, dried up in the stones which I have seen, and formed thin transverse films, dividing the cavities more or less perfectly into chambers.—O. Stapf.

Fig. 1, a branchlet of an inflorescence ; 2, a calyx ; 3, a disc with 3 of the 5 stamens ; 4, a disc expanded ; 5, an ovary ; 6, the same, cut longitudinally ; 7, a stone, seen from the side ; 8, the same, seen from the top ; 9, a stone in cross-section ; 10, an embryo.—*All enlarged.*

Note to Plates 2668–2670.

Since the publication of the last part of the *Icones Plantarum*, the *Bulletin de la Société Botanique de France*, part 1, March 1900, has come to hand. It contains an article by the late A. Franchet entitled : ' Les Scrofularinées de la Chine dans l'herbier du Muséum de Paris.' Under Plate 2668 of this work it is mentioned that the writer's last communication from Mr. A. Franchet contained some queries concerning the affinities of *Scrofella* and *Calorhabdos*. This was dated February 4, and he died on February 15, no reply having been sent to him in the meantime. Franchet had communicated the paper on January 12, and it has been published as originally drawn up. In this paper he reduces *Scrofella* to *Calorhabdos* (p. 19), as I think, erroneously. He describes a genuine *Calorhabdos*—*C. sutchuenensis* - which must be very near *C. cauloptera*, Hance. He also describes a *C. Fargesii*, which is a *Botryopleuron* and very near *B. stenostachyum*, Hemsl. Although he retains the genus as left in Bentham and Hooker's *Genera Plantarum*, he divides the species into two sections, which he names *Acrostachys* and *Plagiostachys*, and suggests that it would be better to limit *Calorhabdos* to those species having a terminal inflorescence ; so we independently arrived at the same conclusion except so far as *Scrofella* is concerned.—W. Botting Hemsley.

Plate 2668.

SCROFELLA CHINENSIS, *Maxim.*

SCROPHULARIACEÆ

S. chinensis, *Maxim. in Bull. Acad. Petersb.* xxxii. p. 511, *et in Mél. Biol.* xii. p. 763 (*species unica*).

Herba erecta, fere omnino glabra, caule simplici 6–12 poll. alto, internodiis brevissimis. *Folia* (radicalia non visa) alterna, sessilia, suberecta, caule appressa, papyracea, oblongo-lanceolata, 9–18 lin. longa, obtusa. *Flores* minuti, brevissime pedicellati, in racemum terminalem densissimum dispositi, bracteolis parvis linearibus quam floribus brevioribus. *Calyx* parce puberulus, alte 5-lobatus, lobis, præter posticum minutum dentiformem, lineari-lanceolatis vix acutis. *Corolla* bilabiata, tubo ventricoso intus extusque glabro calycem superante, labio postico quadrinervio trilobato lobo intermedio majore emarginato, labio antico parvo integro linguiformi recurvo intus in sinubus barbato. Stamina 2, postica, inclusa, filamentis glabris ; staminodia nulla. *Ovarium* glabrum, disco annulato crasso cinctum, ovulis plurimis. *Capsula* ignota.

China : Northern Szechuen, *Potanin.*

The last communication received by the writer from the late M. Franchet, written a little more than a week before his sudden death, contained some queries respecting the affinities of *Scrofella* and *Calorhabdos*, which led to an investigation of these genera, and the results are put on record here, under plates 2668 2670. M. Franchet suggested the existence of a close relationship between these genera, but the points of difference seem to be sufficient to maintain their generic separation.—W. Botting Hemsley.

Fig. 1, a flower and bracteole ; 2, calyx and pistil ; 3, corolla laid open.—*All enlarged.*

1
2
3
4
5

Plate 2669.

CALORHABDOS BRUNONIANA, *Benth.*

(and dissections of C. cauloptera, *Hance.)*

C. brunoniana, *Benth. Scroph. Ind.* p. 44, *et in DC. Prodr.* x. p. 456 ; a *C. cauloptera,* Hance, imprimis caulibus teretibus differt.

Herba perennis, glabrescens, caulibus erectis simplicibus. *Folia* alterna, quam internodia longiora, subsessilia, tenuia, fere membranacea, lanceolata, 2½ 5 poll. longa, acuta, deorsum attenuata, minute serrata, venis primariis lateralibus paucis subtus parce setulosis. *Flores* parvi, in racemum terminalem densissimum dispositi, bracteolis lanceolatis quam calyce brevioribus. *Calyx* inæqualiter alte 5-lobatus, lobis anguste lanceolatis vix acutis margine parce minuteque ciliatis. *Corollæ* tubus cylindricus, intus medio annulo pilorum instructus, leviter obliquus ; limbus brevis, bilabiatus, labio postico emarginato, labio antico æqualiter trilobato. *Stamina* 2, postica, filamentis pilosulis antheris exsertis ; staminodia nulla. *Ovarium* glabrum, disco annulato cinctum, stylo gracili quam staminibus breviore. *Capsula* polysperma.

India : Gossain Than, Nepal, *Wallich,* 405.
China : at the foot of Tsangshan, near Tali, *Delavay,* 3161.

In Bentham and Hooker's *Genera Plantarum,* ii. p. 963, *Paederota axillaris,* Sieb. et Zucc., is reduced to *Calorhabdos,* but since that was done several plants allied to *P. axillaris* have been discovered in China, as well as one very closely related to the original *Calorhabdos brunoniana,* and it seems desirable to separate them generically. The reasons for this course are given under Plate 2670. —W. Botting Hemsley.

Fig. 1, a flower and bracteole of *Calorhabdos brunoniana,* Benth. ; 2, corolla of the same laid open ; 3, pistil ; 4, a flower of *C. cauloptera,* Hance ; 5, corolla of the same laid open.—*All enlarged.*

Plate 2670.

BOTRYOPLEURON VENOSUM, *Hemsl.*

(*and dissections of* B. stenostachyum, *Hemsl.*)

Scrophulariaceæ.

Botryopleuron, *Hemsl.* (*gen. nov.*). A *Calorhabdo* differt caulibus vagantibus vel prostratis, racemis axillaribus amentiformibus, corollæ limbo subæqualiter 4-lobato, staminibus longe exsertis.

B. venosum, *Hemsl* ; Calorhabdos venosa, *Hemsl. in Journ. Linn. Soc.* xxvi. p. 197.

Herba prostrata vel vagans, fere omnino glabra, caulibus gracilibus elongatis 1–3-pedalibus. *Folia* alterna, brevissime petiolata, demum subcoriacea, lanceolata, usque ad 5 poll. longa sed sæpius breviora, acute acuminata, basi cuneata vel rotundata, aculeolato-serrulata, supra nitida, subtus pallidiora, grosse reticulato-venosa, venis primariis paucis inter se arcuatim connexis supra insigniter impressis subtus elevatis. *Flores* purpurei, subsessiles, dense racemoso-spicati ; racemi 1–1½ poll. longi, brevissime pedunculati, bracteis angustis acuminatis obscure ciliolatis. *Calyx* præter margines loborum lanceolatorum glaber. *Corollæ* tubus subcylindricus, intus filamentaque barbati. *Stamina* 2, postica, exserta ; staminodia nulla. *Capsula* oligosperma.

China : Ningpo mountains, Chekiang, *Faber* ; Ichang, Nanto and mountains to the northward, *A. Henry*, 55, 2187, 4638.

Botryopleuron as here understood, including four species, namely :

1, *B. venosum*, Hemsl., syn. *Calorhabdos venosa*, Hemsl. in Journ. Linn. Soc. xxvi. p. 197.

2, *B. stenostachyum*, Hemsl., syn. *Calorhabdos stenostachya*, Hemsl. loc. cit. p. 196.

3, *B. latifolium*, Hemsl., syn. *Calorhabdos latifolia*, Hemsl. loc. cit. p. 196, t. 4.

4, *B. axillare*, Hemsl., syn. *Calorhabdos axillaris*, Benth. et Hook. f. Gen. Pl. ii. p. 963 ; *Paderota axillaris*, Sieb et Zucc. Fl. Jap. Fam. Nat. ii. p. 20.

The propriety of giving this little group of plants generic rank will, I think, not be disputed. In the first place, their habit is so entirely

different from that of the genuine species of *Calorhabdos*, and as this is associated with a very peculiar inflorescence and deviations in floral structure, they constitute as distinct a genus as the majority of the genera of the order.—W. Botting Hemsley.

Fig. 1, a flower of *Botryopleuron venosum*, Hemsl.; 2, a corolla of the same laid open; 3, a pistil; 4, a flower of *B. stenostachyum*, Hemsl.; 5, corolla of the same laid open.—*All enlarged.*

Plate 2671.

PLECTRANTHUS CALCARATUS, *Hemsl.*

Labiatæ.

P. calcaratus, *Hemsl.* (*sp. nov.*) ; inter species hujus generis hucusque cognitas longitudine corollæ calcaris insignis.

Herba perennis, hispidula, caulibus gracillimis 1–2-pedalibus adscendentibus. *Folia* quam internodia sæpius breviora, distincte petiolata, tenuia, membranacea, ovato-lanceolata, cum petiolo 1–3 poll. longa, utrinque attenuata, crenata, paucinervia. *Flores* in racemos terminales dispositi, pauci aggregati, graciliter pedicellati. *Calycis* hispiduli labium posticum trilobatum, lobis rotundatis, lobis lateralibus multoties minoribus ; labium anticum latum, emarginatum. *Corolla* extus glandulosa, intus glabra, circiter pollicaris ; tubus gracilis, curvatus, longe calcaratus, calcare acuto ; labium posticum æqualiter 4-lobulatum, lobulis rotundatis ; labium anticum, cymbiforme. *Stamina* quam corolla breviora. *Stylus* stamina paullo excedens. *Nuculæ* ovoideæ, glabræ, punctatæ.

China : mountains west of Szemao, Yunnan, at 4500 to 5000 ft., *A. Henry*, 12,339.

Flowers with spurred corollas are rare in the Labiatæ, and although, as the name implies, *Plectranthus* was founded on a species having that character (L'Héritier, *Stirp. Nov.* t. 41), many of the species are not spurred, and no other species which I have seen has such a highly developed spur as the present one.—W. Botting Hemsley.

Fig. 1, a flower ; 2, calyx laid open showing the disk and nutlets ; 3, corolla in section showing two of the stamens ; 4, fruiting calyx ; 5, a nutlet.—*All enlarged.*

8

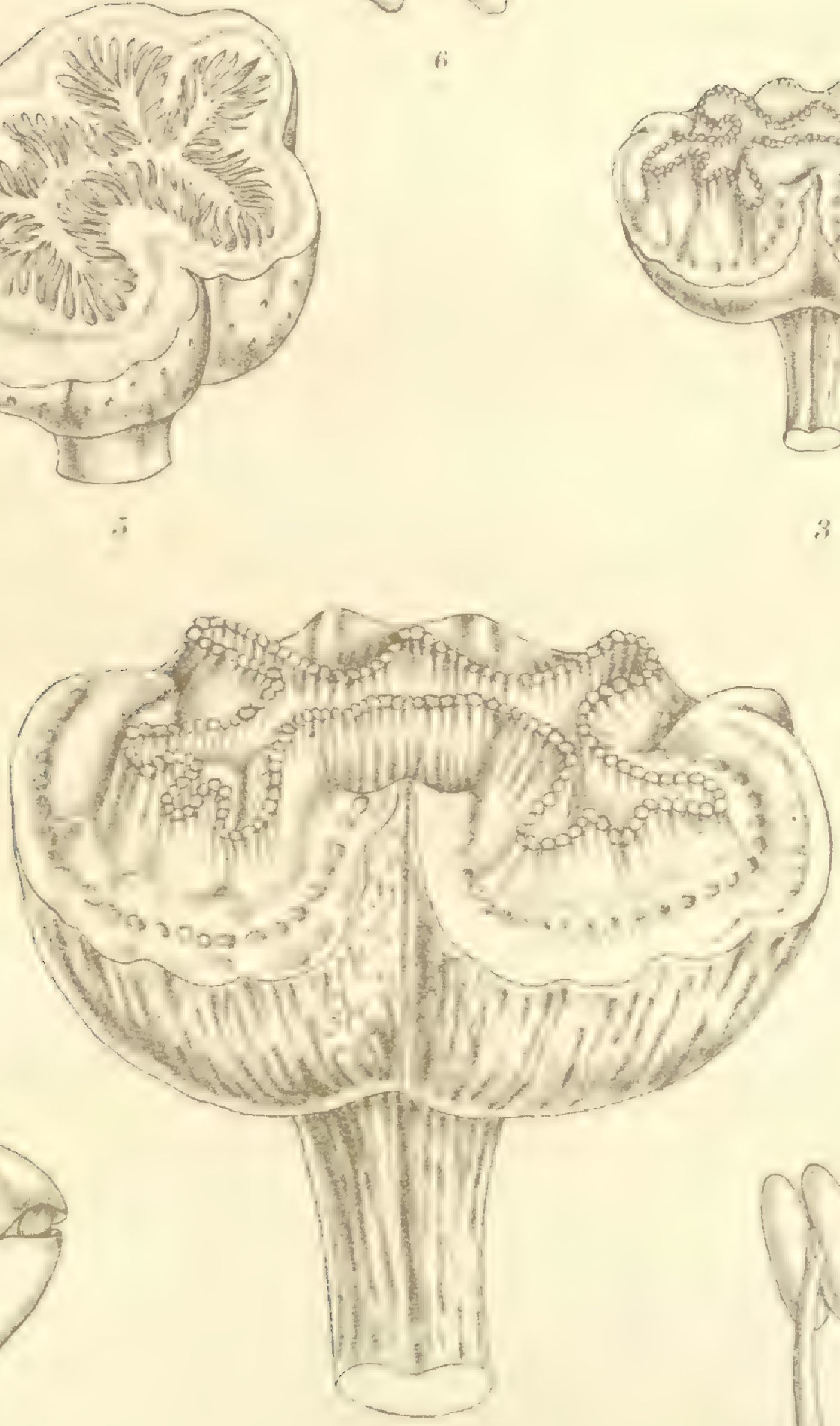
9

7

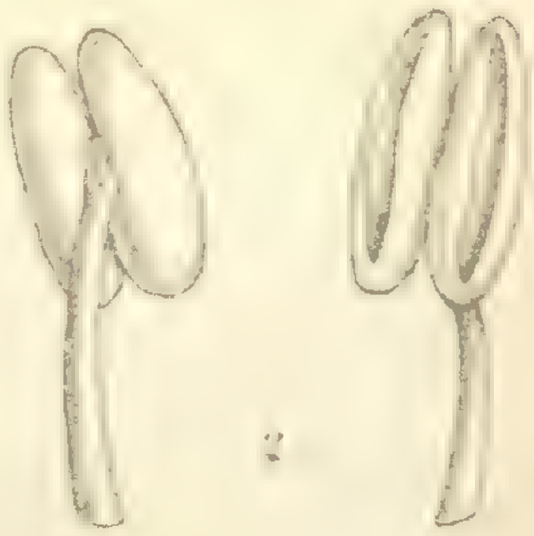
6

5

3



1



2

4

Plate 2672.

TUPIDANTHUS CALYPTRATUS, *Hook. f. et T. Thoms.*

Araliaceæ.

T. calyptratus, *Hook. f. et T. Thoms. in Bot. Mag.* t. 4908 ; *Benth. et Hook. f. Gen. Pl.* i. p. 947.

This singular plant was originally discovered by Sir Joseph Hooker and the late Dr. T. Thomson in Khasia, but it was figured and described in the place cited above from a plant that flowered in the Royal Gardens, Kew, in 1856. As stated in the *Genera Plantarum*, the series of stigmas are incorrectly figured in the *Botanical Magazine*, and the seeds are nowhere described, so far as I am aware. Dr. A. Henry having sent ripe fruit containing perfect seeds, it was thought desirable to complete the illustration of the genus, especially as it presents characters of which scarcely a parallel is known. The ovary has sometimes upwards of 160 cells, each cell containing one ovule ; and the sessile stigmas are arranged in a sinuous manner, corresponding to the cells. It will be perceived that this arrangement permits of a larger number of cells than could appear in a circle of the same diameter. The nearest approach to this large aggregation of carpels and their arrangement is perhaps in *Sararanga sinuosa*, Hemsl. (*Journ. Linn. Soc.* xxx. p. 216, t. 11, & xxxii. pp. 479 488 tt. 4–7 ; *Hooker's Ic. Pl.* t. 2584) ; but in *Sararanga* the flowers are unisexual. *Tupidanthus* is also remarkable in the order for having a very large number of stamens : a character it has in common with *Plerandra* and *Tetraplasandra*, two Polynesian genera of Araliaceæ. They have been described as 2- to many-seriate in *Tupidanthus*, but the scars in the circumference of figure 4 show that they are in one series, and upwards of 100 in number. The crustaceous pyrenes and seeds are very thin, otherwise they present no deviation from the ordinary conditions.—W. Botting Hemsley.

China : Szemao, Yunnan, at 4500 ft., *A. Henry*, 12298, 12298 A. 12298 B.

Fig. 1, a flower-bud, the calyptrate petals in course of being thrown off by the growing stamens ; 2, stamens ; 3 and 4, a fruit ; 5, a cross section of the same ; 6, pyrenes ; 7, a pyrene ; 8, a section of the same ; 9, embryo.—*All except* 1, 3, and 6 *enlarged.*

M. S. del. et lith.

ASPIDOPTERYS OBCORDATA, *Hemsl.*

MALPIGHIACEÆ.

B. obcordata, *Hemsl.* (*sp. nov.*) ; species forma foliorum facile distinguitur.

Frutex alte scandens, ramis teretibus pubescentibus. *Folia* petiolata, coriacea, rotundato-obcordata vel apice trilobata, lobis lateralibus latis rotundatis, intermedio parvo acuminato 3–5 poll. diametro, supra glabra, subtus pubescentia, venis primariis utrinque circiter 5 subtus elevatis. *Flores* albi, 4–5 lin. diametro, in paniculas angustas axillares quam folia breviores dispositi, graciliter pedicellati, pedicellis pubescentibus ; bracteæ et bracteoleæ minutæ. *Sepala* minuta, orbiculari-oblonga, ciliolata. *Petala* tenuia, obovato-oblonga. *Stamina* 10, quam petala paullo breviora. *Ovarium* glabrum, 3-loculare, 3 ovulatum. *Fructus* ignotus.

CHINA : Szemao, Yunnan, at 5000 feet, *A. Henry*, 12,894.

This is the first record of the genus from China.—W. BOTTING HEMSLEY.

Fig. 1, a flower; 2, calyx and pistil; 3, cross section of ovary.

PLATE 2674.

DISCHIDIA COMINSII, *Hemsl.*

ASCLEPIADACEÆ.

D. Cominsii, *Hemsl.* (*sp. nov.*); a *D. Nummularia*, R. Br. foliis tenuioribus ovatis, corollæ lobis quam tubo brevioribus differt.

Epiphyta glabra, caulibus elongatis filiformibus ad nodos radicantibus. *Folia* brevissime petiolata, subcarnosa, ovata vel ovato-lanceolata, sæpius circiter pollicaria, quam internodia sæpius breviora, vix acuta venis immersis inconspicuis. *Flores* minuti, vix 2 lin. longi, axillares, solitarii, breviter pedicellati. *Calyx* minimus, lobis oblongis obtusis. *Corolla* urceolata, tubo globoso, lobis deltoideis acutis intus basi barbatis. *Coronæ* squamæ arcuato-incurvæ, bifidæ, lobis acutis. *Folliculi* teretes, patentes, circiter pollicares, læves, acuminati.

SOLOMON GROUP: Florida Island, on trees on the beach, *Comins*, 316.

Although this species bears a strong resemblance to the widely spread *D. Nummularia*, R. Br., it is easily distinguished by the characters indicated above.—W. BOTTING HEMSLEY.

Fig. 1. a flower; 2, a section showing the corona; 3, androecium from which the corona has been removed; 4, a pair of pollen masses; 5, a seed.—*All enlarged.*

M.S. del. et lith.

CLERODENDRON SUBSCAPOSUM, *Hemsl.*

VERBENACEÆ.

C. subscaposum, *Hemsl.* (*sp. nov.*) ; species habitu distinctissima.

Caulis primarius subcarnosus vel crassus et mollis, ut videtur prostratus, cortice laxo deciduo ; caules (vel scapi) floriferi, erecti, graciles, circiter sesquipedales, læves, glabri, infra medium foliis 2 sessilibus parvis ovatis instructi, cetera nudi. *Folia* longe petiolata, erecta, tenuia, fere membranacea, rotundato-cordata, sinu angustissimo, absque petiolo 5–6 poll. longa, acuminata, obscure irregulariterque dentata, supra hispidula, subtus glabrescentia pallidiora vel colorata, venis primariis sat conspicuis ; petioli crassi, usque ad 10 poll. longi. *Flores* cærulei (fide Henry), absque staminibus 4–5 lin longi, in paniculam angustam laxam terminalem dispositi ; paniculæ ramuli subverticellati, pauciflori ; pedicelli capillares. *Calyx* hemisphæricus, dentibus brevibus rotundatis. *Corollæ* tubus brevis, limbi lobis ovato-oblongis obtusis.

CHINA : Mountains south-east of Mengtze, Yunnan, at 7000 feet. *A. Henry*, 9181.

The only specimen of this plant does not bear fully expanded flowers, but it is so different in habit from anything else we know that it was considered worth figuring.—W. BOTTING HEMSLEY.

Fig. 1, a flower bud ; 2, an expanded flower ; 3, part of calyx and disc.—*All enlarged.*

The impression of the 'Icones' is limited to 250 copies, and the work will not be reprinted.

A small number of copies of the Third Series, comprising 1,000 plates, is offered for sale at £5 each.

Application should be made to Messrs. DULAU & Co., *37 Soho Square.*

VOL. VII. – PART IV.] [FEBRUARY.

HOOKER'S

ICONES PLANTARUM;

OR,

FIGURES, WITH DESCRIPTIVE CHARACTERS AND REMARKS,

OF NEW AND RARE PLANTS,

SELECTED FROM THE

KEW HERBARIUM.

FOURTH SERIES.

EDITED FOR THE BENTHAM TRUSTEES BY

SIR WILLIAM T. THISELTON-DYER.

K.C.M.G., C.I.E., LL.D., M.A., F.R.S.

HONORARY STUDENT OF CHRIST CHURCH, OXFORD

DIRECTOR, ROYAL BOTANIC GARDENS, KEW.

VOL. VII.

OR VOL. XXVII. OF THE ENTIRE WORK.

DULAU & CO.

37 SOHO SQUARE, LONDON.

1901.

SPOTTISWOODE AND CO. LTD., PRINTERS, NEW-STREET SQUARE, LONDON.

Price Four Shillings.

Plate 2676.

CASTILLOA AUSTRALIS, *Hemsl.*

Urticaceæ. Tribe Artocarpeæ.

C. australis, *Hemsl.* (*sp. nov.*); species a *C. elastica* foliis minus hirsutis supra levibus, receptaculis distincte stipitatis, perianthio breviter 4-dentato, carpellis haud carnosis coriaceis differt.

Arbor sempervirens trunco erecto levi, ramis horizontalibus, succo lacteo (*Pearce*), novellis sericeis. *Ramuli* fructiferi crassi. *Folia* brevissime petiolata, coriacea, oblonga vel oblongo-lanceolata, 12–18 poll. longa, 4–7 poll. lata, abrupte acuteque acuminata, basi cordata, margine undulata, supra glabra vel cito glabrescentia, subtus præcipue secus costam venasque hirsuta, venis primariis utrinque 17–19 arcuatis prope marginem conjunctis supra leviter impressis subtus elevatis; stipulæ lanceolatæ, acutæ, $1\frac{1}{2}$–2 poll. longæ, cito deciduæ. *Flores masculini* ignoti. *Receptacula* florum femininorum supra axillas foliorum solitaria, $1\frac{1}{2}$–$1\frac{3}{4}$ poll. diametro, stipitata, stipitibus crassis 9–12 lin. longis; bracteæ multiseriatæ, acuminatæ. *Nuculæ* perfectæ desunt.

Peru: believed to be from the region of Cuzco (but the exact locality is unknown), at 4000 to 5000 feet, *Pearce*, January 1866.

Richard Pearce, who collected for Messrs. James Veitch & Sons, labelled the specimens described above as follows: 'Evg. tree with smooth erect trunk and horizontal branches with a clammy milky juice. Male fls.? Female creamy yell. Style and stigma fleshy. Stigma bifid cushion-shaped. Nuts in a fleshy head, eatable. Com. in woods 4 5000 ft., Jan. 1866. Moro Zungo.'

Messrs Veitch, after much research, can only say that Pearce was somewhere in the region indicated at that date.

This is all we know of *C. australis* at present. - W. Botting Hemsley.

Fig. 1, stipules; 2, a female inflorescence; 3, a female flower; 4, pistil with part of the ovary removed; 5, an immature nut. - *All except* 1 *enlarged.*

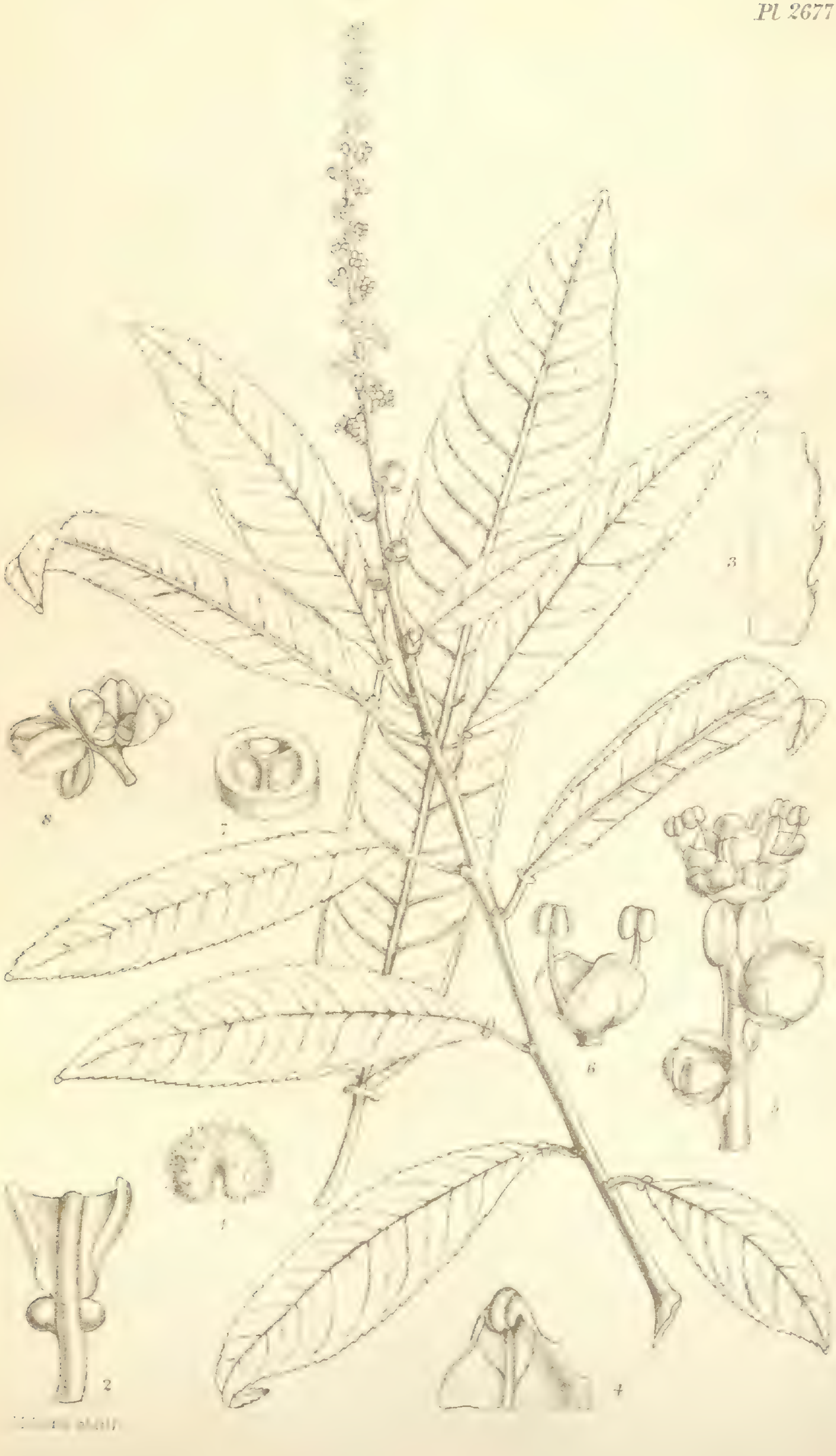


Plate 2677.

SAPIUM MORITZIANUM, *Klotzsch.*

Euphorbiaceæ. Tribe Crotoneæ.

S. moritzianum, *Klotzsch in Seem. Bot. Voy. 'Herald,'* p. 100 ; ab *S. aucupario*, Jacq., ramulis floriferis gracilibus, foliis minoribus tenuioribus minute crebreque serratis differt.

Arbor 30-pedalis (fide *Seemann*), undique glabra, ramulis floriferis (in speciminibus visis) lateralibus brevibus gracilibus patentibus. *Folia* petiolata, tenuia, subcoriacea, lineari-lanceolata vel oblonga, absque petiolo usque ad 5 poll. longa, sed sæpius 2–2½ poll. longa, apice glandulosa, introflexa, basi cuneata, crebre serrulata (etiam in ramulis floriferis), epunctata, venis primariis lateralibus numerosis ; petioli graciles, 3–6 lin. longi, apice glandulis binis subglobosis vel subteretibus leviter curvatis muniti ; stipulæ parvæ, reniformes, hispidulæ, persistentes. *Spicæ* androgynæ vel interdum omnino masculæ, terminales, solitariæ, folia excedentes. *Flores feminini* inferiores, pauci, solitarii, juveniles non visi. *Flores masculini* circiter 7–10 aggregati. *Capsulæ* 5–6 lin. diametro, leves, trivalvæ ; semina non visa. *Excæcaria biglandulosa*, ξ *moritziana*, Muell. Arg. in DC. Prodr. xv. 2, p. 1206. *Sapium biglandulosum*, λ *moritzianum*, Muell. Arg. in Linnæa, xxxii. p. 119.

South America : Province of Panama, *Seemann*, 1243 in herb. Mus. Brit. ; Columbia, without special locality, *Kursten*, 35, in herb. Berol. ; 'Higuerote Gebirge,' *Moritz*, 236, in herb. Berol.

According to Seemann, *loc. sup. cit.*, this tree bears the name *Olivo* in Panama. Neither of the collectors has any further note on it ; but it is one of the most distinct of the species combined under the name *biglandulosum*. The specimens from the three collectors named above all agree in having slender branches and small closely serrulated leaves. The Higuerote mountains are probably near Higuerote Point, to the east of Caracas, in Venezuela.—W. Botting Hemsley.

Fig. 1, a stipule ; 2, under side of base of leaf ; 3, margin of leaf ; 4, upper side of apex of leaf ; 5, lower portion of a flower-spike ; 6, a male flower ; 7, cross section of an ovary ; 8, capsules.—*All except the last enlarged.*

1

4

3

2

PLATE 2678.

SAPIUM PŒPPIGII, *Hemsl.*

EUPHORBIACEÆ. Tribe CROTONEÆ.

Sapium Pœppigii, *Hemsl.* (*sp. nov.*); similis *S. aerei*, Klotzsch, ab eo recedit foliis elliptico-oblongis levibus supra nitidis.

Ramuli floriferi crassiusculi, glabri. *Folia* omnia in specimine viso delapsa, petiolata, coriacea, oblonga vel elliptico-oblonga, absque petiolo $3\frac{1}{2}$–5 poll. longa, $1\frac{3}{4}$–2 poll. lata, utrinque rotundata, apice glandula magna cucullifformi-incrassata introrsum flexa instructa, omnino glabra, supra nitida, subtus pallidiora, opaca, margine obscure crenulata et hinc inde glanduligera, venis primariis numerosis angustis utrinque vix elevatis; petiolus unicus tantum visus semipollicaris, apice glandulis binis subglobosis instructus; stipulæ squamiformes, diu persistentes. *Spicæ* terminales, simplices, androgynæ, quam folia, ut videtur, breviores. *Flores feminini* quam in speciebus plurimis numerosiores (12 15). *Flores masculini* 5–7 aggregati. *Capsulæ* desunt. *Sapium biglandulosum*, *β hamatum*, Muell. Arg. in DC. Prodr. xv. 2, p. 1204.

SOUTH AMERICA: 'Peruvia subandina,' *Pœppig*, 67, in herb. Berol.

The whole of the material seen of this species consists of three flowering branchlets and three detached leaves, though they are shown as attached in the accompanying plate. But this is the type of Mueller's *S. biglandulosum*, *β hamatum*, and apparently all that he had under observation.—W. BOTTING HEMSLEY.

Fig. 1, upper side of base of leaf; 2, upper side of apex of leaf; 3, intermediate part of flower-spike; 4, bud of male flower laid open.—*All enlarged.*

Plate 2679.

SAPIUM CUPULIFERUM, *Hemsl.*

Euphorbiaceæ. Tribe Crotoneæ.

S. cupuliferum, *Hemsl. (sp. nov.)*; similis *S. marginato*, Muell. Arg., a quo differt imprimis petiolis eglandulosis, bracteolarum glandulis cupuliformibus.

Frutex undique glaber, ramulis gracilibus, internodiis quam foliis brevioribus, cortice brunneo. *Folia* brevissime petiolata, petiolis eglandulosis, coriacea, rigida, erecto-patentia, anguste lanceolata, $1\frac{1}{2}$–2 poll. longa, apice apiculata, eglandulosa, basi cuneata, margine incrassata etiamque crebre calloso-serrulata, supra subnitida, venis primariis inconspicuis; stipulæ squamiformes, crassæ, persistentes, ut videtur, medio 1 glandulosæ. *Spicæ* subterminales, solitariæ, folia paullo excedentes; in speciminibus visis flores masculini tantum adsunt. *Bracteæ* circiter 8–10-floræ, latæ, apiculatæ, glandulis binis cupuliformibus adnatæ.

South America: Gran Chaco, Argentina, *Hayenbeck* in herb. Berol.

S. cupuliferum shows better than any other species that I have examined that the glands of the inflorescence are really appendages of the bracts, though much more prominent than the bracts themselves. In general appearance it so strongly resembles *S. marginatum*, Muell. Arg., that it might easily be mistaken for that species. — W. Botting Hemsley.

Fig. 1, under side of base of leaf and stipules; 2, upper part of the same; 3, part of flower-spike; 4, one of the glands and a bract.—*All enlarged.*

Plate 2680.

SAPIUM MEXICANUM, *Hemsl.*

Euphorbiaceæ. Tribe Crotoneæ.

S. mexicanum, *Hemsl.* (*sp. nov.*); a *S. aucupario* differt foliis in ramulis floriferis crebre serrulatis apice eglandulosis, glandulis petiolorum minoribus, capsulis majoribus lignosis.

Arbor undique glabra, ramulis fructigeris crassiusculis glabris. *Folia* longe petiolata, coriacea, flexilia, pallide viridia, oblongo-lanceolata, cum petiolo 4–8 poll. longa et usque ad $1\frac{3}{4}$ poll. lata, apice subobtusa, eglandulosa, basi cuneata vel rotundata, margine per totam longitudinem minute calloso-crenata, venis primariis lateralibus numerosis tenuibus curvatis prope marginem obscure connexis; petioli graciles, 9–15 lin. longi, apice biglandulosi, glandulis crassis subglobosis; stipulæ latæ, squamiformes, diu persistentes. *Spicæ* androgynæ, simplices, terminales vel pseudoterminales, solitariæ, folia superantes. *Bracteæ* parvæ, glandulis geminatis peltatis ovalibus instructæ. *Flores* 3 vel 4 inferiores feminini, sub quaque bractea solitarii, sessiles, ceteri masculi, 9–12 sub quaque bractea aggregati. *Styli* a basi liberi, crassi, recurvi, cito decidui. *Capsula* brevissime pedicellata, vere lignosa, subglobosa, ab axe persistenti loculicide dehiscens, expansa circiter $1\frac{1}{2}$ poll. diametro, valvis demum patentissimis diu persistentibus; semina ovoidea, 5–6 lin. longa, sub membrana cellulari cinnabarina testa leviter corrugata; embryo centralis, cotyledonibus orbicularibus.

Mexico: near Cuernavaca, State of Morelos, at 5000 ft., *Pringle*, 6336; the same locality, collected in July 1835, *Schiede*; Atlacomulco, December 1834, *Schiede*, 1052; Zelaya, Queretaro, *Schiede*, 1072.

This species was originally collected by Dr. C. J. W. Schiede, in 1834 and 1835, in the same district where Pringle found it: a fact I have been able to establish through the courtesy of Dr. A. Engler in lending the Berlin specimens of *Sapium* for purposes of comparison. Although Schiede's specimens were collected so long ago, nobody seems to have taken them up, probably because the flowers are not in a good condition. One specimen is doubtingly referred to *Sapium zelayense*, H. B. K. (*Nov. Gen. et Sp.* ii. p. 65), a common and distinct tree, now referred to *Stillingia*.

Besides the specimens referred here to *Sapium mexicanum*, Hemsl.,

there are specimens in the Kew Herbarium of two other species of *Sapium* from Mexico ; or, possibly, one of them may belong to *Stillingia*, as defined in Bentham and Hooker's *Genera Plantarum*. But, it should be added, the limits of *Sapium*, *Stillingia*, *Excæcaria*, and some other allied genera have been so diversely interpreted by different botanists that their proper limits could only be defined, if even then, after a thorough study of all the numerous species of this group of the Euphorbiaceæ.

The other assumed species of *Sapium* from Mexico are : *Bourgeau*, 3020, from Santa Aña, near Orizaba, and *Rovirosa*, 769, 'habitat in Famulté sylvis primævis, Tabasco.' The former is a sterile specimen, and is very similar to *S. mexicanum*, but differs in having oblong leaves, thicker in texture, and furnished with a prominent apical gland. The latter is the same as a sterile specimen in the Berlin Herbarium labelled : 'Schiede, 44. Vera Cruz, in sylvis.' It is the *Ficus altera* of Schlechtendal and Chamisso's enumeration of Schiede and Deppe's collection, *Linnæa*, v. (1830), p. 82 ; and it bears the manuscript name of '*Ficus sapioides*, Kl.' in the Berlin Herbarium. The following is a description of Rovirosa's specimen, so far as it goes.

Sapium lateriflorum, *Hemsl.* (*sp. nov.*) ; a speciebus omnibus hujus affinitatis hactenus descriptis differt foliorum amplitudine et spicis axillaribus.

Arbor novellis omnino glabris. *Ramuli floriferi* crassi, medulla lata. *Folia* longissime petiolata, coriacea, oblanceolato oblonga, vel in speciminibus Schiedianis interdum ovalia vel elliptica, cum petiolo usque ad 9–10 poll. longa, et $2\frac{3}{4}$ poll. lata, apice rotundata, lobo parvo rotundato supra concavo (glandulifero ?) terminata, basi subcuneata, margine obscurissime remoteque denticulata, venis primariis lateralibus utrinque circiter 15–17 tenuibus leviter curvatis ; petioli graciliusculi, $1\frac{1}{2}$–2 poll. longi, apice biglandulosi, glandulis parvis conicis ; stipulæ auriculiformes, brevissimæ, persistentes. *Spicæ* secus ramulos axillares, solitarii, simplices, quam folia breviores, nudæ vel 1–2 foliis parvis munitæ (ob bracteas 2–3 inferiores vacuas normaliter androgynæ ?), floribus masculis interrupte pseudoverticillatis. *Bracteæ* parvæ, glandulis geminatis peltatis oblongis magnis instructæ. *Flores masculi* sub unaquaque bractea 6–9. *Perianthium* bipartitum. *Stamina* 2, exserta.

Mexico : primeval woods of Famulté, Tabasco, *Rovirosa*, 1890, n. 769.

As set forth in the differential phrase above, this species differs, among other things, from previously described species in having lateral spikes ; but this character may prove not to be of specific value. The only other specimens I have seen which exhibit the character are : *Hahn*, 882, from Martinique, and *Trail*, 765, North Brazil ; both, however, specifically different from *S. lateriflorum*, Hemsl., and from each other. The former has small leaves with close lateral veins, very thick flowering-branches and rigid androgynous flower-spikes, longer

than the leaves ; solitary female flowers in the lower part of the spike, and a two-celled gynæceum within a tubular perianth, and normal male flowers. The latter, collected by Dr. J. W. H. Trail, at Prainha, on the Lower Amazon, consists of long flowering-branches bearing numerous, very slender, androgynous flower-spikes, springing from the axils of fallen leaves. The spikes are from three to four inches long, distinctly pedunculate, and bear one, or rarely two, small leaves near the lowermost flowers ; and the petiole of these leaves is biglandular at the apex. The gynæceum is similar to that of the Martinique plant but three-celled. Trail describes it as a slender tree, 15-25 feet high, and states that the branches when broken give a copious milky juice, which hardens into a kind of india-rubber. I have not been able to connect any other specimens with any of the three species described above as having lateral inflorescences.—W. Botting Hemsley.

Fig. 1, under surface of the apex of leaf: 2, portion of a flower-spike bearing a solitary female flower and a cluster of male flowers; 3, a male flower; 4, open capsules ; 5, a seed after the removal of the outer cellular, coloured covering ; 6, section of a seed showing the embryo.—*All enlarged, except* 4 *and* 5.

1
2
3
4
5
6

Plate 2681.

SAPIUM SUBEROSUM, *Muell. Arg.*

Euphorbiaceæ. Tribe Crotoneæ.

S. suberosum, *Muell. Arg. in Linnæa*, xxxiv. p. 217 ; 'a reliquis hujus sectionis differt magnitudine et forma capsularum.'

Ramuli fructiferi laterales, breves, crassiusculi. *Folia* petiolata, coriacea, ovato-lanceolata, oblongo-lanceolata, vel fere elliptica, cum petiolo 3 5 poll. longa, obscure crenulata, et hinc inde in margine glandulifera, apice glandula cuculliformi instructa, basi sæpius rotundata, utrinque suberoso-bullata vel pustulata (abnormaliter ?), venis primariis lateralibus numerosissimis leviter curvatis ; petioli 4 9 lin. longi, apice glandulis binis teretibus curvatis instructi. *Spicæ*, ut videtur, solitariæ. *Capsulæ* 3 6, congestæ, 3 4-loculares, depresso-globosæ, 4 6 lin. diametro, verrucosæ vel pustulatæ ; semina tuberculata. *Excæcaria suberosa*, Muell. Arg. in DC. Prodr. xv. 2, p. 1202.

Barbados : without special locality, *Rob. Schomburgk*, 709, in herb. Berol.

Kew possesses no specimen of a *Sapium* from Barbados, and none from the West Indies, or elsewhere, that we can identify with *S. suberosum*, Muell. Arg., though the blistered appearance of the shoots, leaves, and capsules is perhaps abnormal. As stated under plate 2650, the plant figured by Plukenet as *Tithymalus arbor americanus*, &c. (*Almagest. Bot.* p. 369, t. 229, f. 8.), is recorded as having been cultivated at Hampton Court and received from Barbados. What Plukenet says is this : '*Aulæ Hamptoniæ in plantar. rariorum ditissimo hort. Reg. collegim. & ab Insula Barbadensi transmissū accepimus.*' This is important, because it does not follow that the Hampton Court plant was obtained from Barbados. Indeed, from a careful comparison of Plukenet's specimens in the British Museum with his figure, there is little doubt that the figure was made up from fragments of two species. The detached leaves in vol. iv. pp. 82 and 111 of Plukenet's collection probably all belong to *S. suberosum*, Muell. Arg., as they have the very numerous parallel primary veins characteristic of this species ; but both *S. Laurocerasus*, Desf., and *S. lauriifolium*, Griseb., have very numerous veins, associated with clustered spikes.—W. Botting Hemsley.

Fig. 1, apex of leaf seen from above ; 2, four-valved capsules : 3, a carpel from within ; 4, a seed ; 5 and 6, different views of the same.—*All except 2 and 4 enlarged.*

6

8

7

5

4

1

3

2

M. S. Redoute Del.

Plate 2682.

SAPIUM AEREUM, *Klotzsch.*

Euphorbiaceæ. Tribe Crotoneæ.

S. aereum, *Klotzsch in Linnæa*, xxxii. p. 119 ; similis *S. Poeppigii* sed foliis scabridulis basi subcuneatis supra nitore submetallico viridiscente insignitis.

Folia graciliter petiolata, tenuiter coriacea, ovali-oblonga, absque petiolo $2\frac{1}{2}$–4 poll. longa, apice rotundata et glandula magna cuculliformi incrassata introflexa instructa, margine hinc inde glanduligera, supra viridiscentia nitida, subtus pallida, scabridula, venis primariis numerosis minus conspicuis quam in icone ; petioli graciles, 9–12 lin. longi, apice glandulis binis parvis instructi. *Flores* ignoti. *Ovarium* efformatum basi incrassata trilobata stylorum coronatum, stylis cito deciduis. *Capsulæ* 4–5 lin. diametro, leves, 3-loculares ; semina suborbicularia, compressa, circiter 2–$2\frac{1}{2}$ lin. diametro, tuberculato-exsculpta, nigra.

South America : Peru, *Ruiz & Pavon* in herb. Berol.

The type of this species in the Berlin Herbarium consists of detached leaves, advanced ovaries, separated capsules, and two or three seeds as represented in the accompanying plate. The nearest like it in the Kew Herbarium is a specimen from Costa Rica, at an elevation of 1550 metres (*Tonduz*, 12428), but the leaves want the metallic sheen, the persistent base of the styles is terete, and the brown seeds are only about half as large as those of *S. aereum*. There is also a specimen very near *S. aereum* in the Kew Herbarium from New Grenada, collected at Ubala, Bogota, at an elevation of 1700 metres, by J. Triana. It bears no number, but is designated 'caucho.'—W. Botting Hemsley.

Fig. 1, base of upper side of a leaf; 2, advanced female flower showing the base of the deciduous styles, natural size ; 3, the same enlarged ; 4, one valve of capsule, natural size ; 5, the same from the inside ; 6, seed, natural size ; 7 and 8, different views of the same.—*Enlarged, where not otherwise indicated.*

3

2

1

M.S. del. et lith.

Plate 2683.

SAPIUM CILIATUM, *Hemsl.*

EUPHORBIACEÆ. Tribe CROTONEÆ.

S. ciliatum, *Hemsl.* (*sp. nov.*); ab omnibus speciebus nobis cognitis margine foliorum per totam longitudinem crebre ciliato glanduloso recedit.

Arbor 12-15-pedalis (*Trail*) novellis undique glabris. *Ramuli* foliiferi graciliusculi, recti, 1-2 ped. longi, internodiis brevissimis. *Folia* breviter petiolata, tenuia, fere membranacea, anguste oblongo-lanceolata, 6-9 poll. longa, maxima circiter 1 poll. lata, apice caudata, obtusiuscula, basi subrotundata, margine eximie ciliato-glandulosa, venis primariis lateralibus distantibus inconspicuis; petioli graciles, sæpius semipollicares, apice glandulis binis longe stipitatis instructi; stipulæ parvæ, squamiformes, lunatæ, persistentes. *Flores*, etc., ignoti.

NORTH BRAZIL: Santarem, *Spruce*, without number; District of Cararaucú, between Villa Bella and Serpa, *Trail*, 770.

A figure of the leaves of this rubber-yielding tree is given in the absence of flowers, because it is so strikingly different from all the other species of the genus *Sapium*, to which it almost certainly belongs. Richard Spruce, who collected it about fifty years ago, notes it as 'a small tree, occasionally met with, but never yet with flowers.' Dr. Trail collected in 1875, and designated it as 'a tree from twelve to fifteen feet high, yielding india-rubber.' I find no description in the *Flora Brasiliensis* that will include it.—W. BOTTING HEMSLEY.

Fig. 1, base of a leaf, seen from above; 2, apex of the same, seen from below; 3, a portion of the margin of the same.—*All enlarged.*

Plate 2684.

SAPIUM SUBSESSILE, *Hemsl.*

Euphorbiaceæ. Tribe Crotoneæ.

S. subsessile, *Hemsl.* (*sp. nov.*) ; a speciebus parvifoliis differt foliis sessilibus vel brevissime petiolatis limbo paulo supra basin glandulis binis sessilibus conspicuis instructo.

Frutex vel arbor parva ex affinitate *S. marginati*, novellis ommino glabris. *Ramuli floriferi* graciles, internodiis quam foliis brevioribus. *Folia* sessilia vel brevissime petiolata, coriacea, oblonga vel anguste ovato-oblonga, 3–12 lin. longa, sed sæpius 6–9 lin. longa, utrinque plus minusve rotundata, apice calloso-apiculata, paulo supra basin glandulis binis sessilibus alte concavis instructa, margine crebre calloso denticulata, venis inconspicuis ; stipulæ minutissimæ. *Spicæ* terminales, solitariæ, erectæ, rigidæ, densæ, usque ad 3 poll. longæ (bene evolutæ non visæ), androgynæ, dimidio inferiore flores femineos circiter 10–12 gerentes. *Bracteæ* glandulis binis orbicularibus instructæ. *Flores masculi* 7–9 sub quaque bractea aggregati ; perianthium 2-phyllum ; stamina 2. *Flores feminei* solitarii ; perianthium 3-phyllum, phyllis rotundato-acuminatis ; ovarium 3-loculare, stylis elongatis recurvis ad medium connatis persistentibus. *Fructus* ignotus.

Brazil : Provinces of St. Paul and Rio de Janeiro, *J. Weir*, 315. Argentine Republic : without locality, *Hieronymus*, 817, in herb. Berol.

This species and *S. marginatum*, Muell. Arg., to which it is closely related, differ from all those previously figured and described in this work in having smaller leaves, in the proportionately much more numerous female flowers in the androgynous spikes, and in the distinctly three leaved perianth of the female flowers.—W. Botting Hemsley.

Fig. 1, stipules ; 2, base of a leaf seen from below ; 3, portion of a spike bearing a cluster of male flowers, bract and glands ; 4, a detached male flower ; 5, portion of a spike bearing a female flower, bract and glands ; 6, a female flower detached. — *All enlarged.*

8
5
9
7
4
6
3
1
2

Plate 2685.

CYCLOCHEILON MINUTIBRACTEOLATUM, *Engl.*

Verbenaceæ. Tribe Chloantheæ.

C. minutibracteolatum, *Engl. in Ann. Ist. Bot. Roma*, vii. (1897), p. 27 ; a *C. somalensi*, Oliv., differt bracteolis a calyce magis remotis angustis minutis.

Fruticulus 2–3 ped. altus ; rami oblique erecti vel divaricati, stricti, primo hispiduli, mox glabrati, tandem albo-cinerei ; ramuli floriferi admodum abbreviati, subpulvinati, dense albo lanati. *Folia* lineari- vel obovato-spatulata, obtusa, 3–6 lin. longa, 1–1½ lin. lata, integra, carnosula, utrinque scaberula. *Pedicelli* capillares, glabri, 2½–3 lin. longi. *Bracteolæ* ¾–1 lin. a calyce remotæ, filiformes vel lineares, ½ lin. longæ. *Calyx* a latere visus orbicularis vel late ellipticus vel obovatus, basi cordatus, 3–4 lin. longus, 3–3½ lin. latus, glaber. *Corolla* alba ; tubus ore obliquus, dorso 3½–4 lin., ventre 4½–5½ lin. longus ; labium superum 1½ ad fere 2 lin. longum, inferum ad 2½ lin. longum lobis subæqualibus latis. *Filamenta* anteriora 2½ lin , posteriora 2 lin. longa ; antherarum loculi utrinque obtusi, 1 lin. longi. *Ovarium* truncato-obovoideum, interdum subobliquum minutissime glandulosum ; stylus 3–4 lin. longus, sparse pubescens ; loculi 2, uniovulati vel anterior biovulatus ; funiculi ascendentes dorsales vel ventrales.—*Cyclocheilon minutibracteolatum*, Engl. Bot. Jahrb. xxiii. (1897), p. 508 ; *C. eriantherum*, Engl. ll. cc. (in parte) ; Stapf in Thiselton-Dyer, Flora Trop. Afr. v. p. 274. *Tinnea erianthera*, Vatke in Linnæa xliii. (1882), p. 539. *T. arabica*, Bak. in Kew Bull. (1894) p. 339. *T. sp.* Oliv. in Trans. Linn. Soc., 2nd ser., ii. p. 347.

Tropical Arabia : Hadramaut, hillsides near Gambla, *Lunt*, 222. Tropical Africa : Galla Land, in the desert between Dolan and the Dana River, *Riva*, 1175 ; Abdallah, *Keller*, 187 ; Somali Land, near Meid, *Hildebrandt*, 1515 ; British East Africa, in Ulu district, *Scott-Elliot*, 6378 ; German East Africa, Kilimanjaro, 5000 ft., *Johnston*.

Cyclocheilon was originally placed in *Scrophulariaceæ* by Oliver, although he added that he did not know any 'genus nearly related to this very curious plant,' nor 'any scrophulariaceous plant with a similar

calyx.' Engler refers it also to *Scrophulariaceæ* without discussing the question of its generic affinities. It has also been described as a Labiata, and indeed it possesses a certain superficial resemblance to *Tinnea*. Professor Oliver had only very fragmentary material at his disposal when he described *Cyclocheilon somalense*, but when *Tinnea eriantherа* and *T. arabica* were recognised as congeneric with *C. somalense*, and Professor Schinz of Zurich was good enough to send to Kew the specimens of *Cyclocheilon* collected by Professor Keller in Somali Land, the material was ample enough to afford a more satisfactory result. There was no difficulty now in recognising the genus as a member of the *Verbenaceæ*, but its position in the order was for some time a puzzle to me until I came across *Nesogenes*, a genus of two species, one of which is confined to Rodriguez Island, while the other is widely spread throughout Polynesia. Both are annuals, and the general aspect scarcely suggests an affinity with *Cyclocheilon*. They have very much smaller flowers, and the calyx is nearly always 5-toothed and very different from that of *Cyclocheilon* ; but, as in this genus, it enlarges during the ripening of the fruit, and it exhibits a similar reticulation. The rest of the flower, however, is apart from the size and the fact that the upper lip is overlapped by the lobes of the lower, instead of overlapping them, and that the division of the ovary into 2 cells is complete—so similar to that of *Nesogenes*, that the two genera must be considered as allies. The fruit of *Nesogenes* is indehiscent, with a hard crustaceous endocarp and two- or, by abortion, one seeded. That of *Cyclocheilon* is not known in the mature state ; but the young fruit possesses a pericarp, the anatomical structure of which is very similar to that of *Nesogenes* with this difference, that the sclerenchymatic layer which corresponds to the endocarp is interrupted along the sutures of the carpels, thus indicating a dehiscence along those lines. The degree to which the inflexed margins of the carpels are fused into a septum in the ovary of *Cyclocheilon* varies. The fusion is always complete at the base where the funicles rise. Higher up the epidermis of each of the two halves of the septum is quite distinct where they meet, the cells being merely interlocked and mutually agglutinated ; still higher up the septum divides into two ridges or disappears altogether. There is usually one ovule in each cell in *C. minutibracteolatum* ; but in Scott-Elliot's specimen I have found two in the anterior cell, which in this case was slightly larger than the posterior. In *C. somalense* two seems to be the normal number. The position of the ovules relative to the axis of the ovary is equally variable, even in the same ovary, as is also the length of the funicle, which, when elongated, is S shaped. I now prefer the name *C. minutibracteolatum* to *C. eriantherum*, as the latter covers, in the sense of Engler, *ll. cc.*, also *C. somalense*, Oliv.—**Otto Stapf.**

Fig. 1, a leaf ; 2, a flower ; 3, a corolla ; 4, lower lip of the corolla and anticous stamens ; 5, upper lip and posticous stamens ; 6, pistil in longitudinal section ; 7, cross section of an ovary near the base with a portion of the disc ; 8, cross section of an ovary, at the middle ; 9, a glandular hair from the ovary —*All enlarged.*

3
2
1

Plate 2686.

HABENARIA REPENS, *Nutt.*

Orchidaceæ. Tribe Ophrydeæ.

H. repens, *Nutt. Gen. Amer.* ii. p. 190 ; *Lindl. Gen. & Sp. Orch.* p. 310 ; *Chapm. Fl. S. U. St.* p. 461 ; *Cogn. in Mart. Fl. Bras.* iii. pars 4, p. 91 ; *Kränzl. Orch. Gen. et Sp.* i. p. 317 (excl. Gardn. n. 3990) ; species distinctissima ex affinitate *H. Michauxii*, Nutt., sed caulibus repentibus etuberiferis aquaticis et calcare breviore facile distinguitur.

Caules repentes, elongati, etuberiferi, radices numerosas emittentes ; florentes erecti, ½–2 ped. alti, foliosi. *Folia* sessilia, oblongo-lanceolata, acuta, trinervia, 2–9 lin. longa, 5–13 lin. lata. *Racemi* 2–8 poll. longi, densiflori, multiflori. *Bracteæ* lineari-lanceolatæ, acuminatæ, 5–10 lin. longæ. *Pedicelli* 4–6 lin. longi. *Sepalum* posticum late ovatum, cucullatum, apiculatum ; lateralia ovata, breviter acuminata, 2½ lin. longa. *Petala* bipartita, 2 lin. longa, lacinia postica falcato-lanceolata, acuta, 2-nervia, antica lineari-filiformia, acuta, postica paullo breviore. *Labellum* tripartitum, 2–2½ lin. longum, lobis lineari-filiformibus apice incurvis subæqualibus ; calcare lineari incurvo 3 lin. longo. *Columna* lata, brevis, antheræ canalibus porrectis brevibus, processubus stigmaticis oblongis crassiusculis, staminodiis dentiformibus minutis. *Capsula* oblonga, 4–5 lin. longa.—*H. tricuspis*, A. Rich., Fl. Cub. iii. p. 249. *H. radicans*, Griseb. Cat. Pl. Cub. p. 271 (in nota).

America. — Chiefly on the coast-lands of the Caribbean Sea, and round the Gulf of Mexico to Florida and South Carolina, in marshes and ditches, aquatic or subaquatic : S. Carolina, *Nuttall* ; Georgia, near Savannah, frequent, *Elliott* ; near Augusta, *Wray* : S. Florida, Sumter Co., *Curtiss*, 2772 ; Lake Co., near Eustis, *Nash*, 578, 873 ; Guatemala, round Lake Duenas, *Salvin*, 183 ; Nicaragua, Greytown, *Tate*, 462 ; W. Indies, Cuba, *Wright*, 3305, 3309 ; Jamaica, St. Annes, *McNab* ; British Guiana, coast region, aquatic in trenches, *Jenman*, 4122 ; near Georgetown, *Jenman*, 7232 ; Lower Orinoco, *Rusby and Squires*, 394 ; Brazil, prov. Santa Catherina, at Blumenau, *Ule*, 873.

A very distinct and widely diffused species, readily distinguished by its submersed creeping stems, without tubers, and numerous long roots. Dr. Rusby remarks that it is a characteristic water plant, and his

specimen has a dense mass of roots at the base of the flowering stem, and Jenman records it as 'aquatic in 40 foot trench.' The upper part of the stem is erect, and bears several leaves, which gradually decrease in size up to the inflorescence. Gardner, 3990, referred to this species by Kränzlin, belongs to *H. hexaptera*, Lindl.—R. Allen Rolfe.

Fig. 1, a flower; 2, a petal (front lobe represented proportionately too broad); 3, the column seen from the side, showing the anther, side lobes of the rostellum, stigmatic processes, and staminode.—*All enlarged.*

1

2

3

4

Plate 2687.

DIPLOCENTRUM CONGESTUM, *Wight*.

Orchidaceæ. Tribe Vandeæ.

D. congestum, *Wight Ic.* t. 1682 ; *Hook. f. Fl. Brit. Ind.* vi. p. 78 ; a *D. recurvo*, Lindl., foliis latioribus et racemis non vel parum ramosis et pendulis distinguitur.

Caulis brevis. *Folia* recurva, lineari-oblonga, apice inæqualiter biloba, lobis obtusis, 3–3½ poll. longa, 4–6 lin. lata. *Racemi* penduli, interdum parce ramosi, 3–6 poll. longi, floribus numerosis. *Bracteæ* patentes, triangulari-ovatæ, acutæ, ½–1½ lin. longæ. *Pedicelli* 1½ lin. longi. *Sepala* elliptico-oblonga, obtusa, 1½–2 poll. longa, lateralia reflexa. *Petala* elliptico-oblonga, obtusa, 1¼–1½ lin. longa. *Labellum* oblongum, apice reflexum et truncatum, basi paullo latius et obtuse carinatum, circa 2 lin. longum ; calcaria saccato-oblonga, ¾ lin. longa, paullo divergentia. *Capsula* oblonga, breviter pedicellata, 5 lin. longa.

India : Travancore ; in the Iyamallay Hills, *Wight* ; without locality, *Woodrow*.

This remarkable plant has hitherto been known only from Wight's original materials, but now a plant which was received in August 1895, from G. Marshall Woodrow, Esq., formerly Professor of Botany in the College of Science, Pooma, has flowered in the Kew collection, and is represented in the annexed plate. A character in the structure of the genus which appears to have been previously overlooked is the curious flap-like appendage at the base of the column which closes the mouth of each spur.—R. Allen Rolfe.

Fig. 1, A flower seen from the front, showing the flaps which cover the mouths of the two spurs ; 2, the same with the sepals and petals removed, showing the flaps opened ; 3, the preceding seen from the side ; 4, anther-case seen from the front and side ; 5, the pollinarium.—*All enlarged.*

M.S. del. et lith.

Plate 2688.

ITOA ORIENTALIS, *Hemsl.*

Bixaceæ. Tribe Flacourtieæ.

Itoa, *Hemsl.* Genus novum ex affinitate *Poliothyrsi* (*Oliv. huj. op. t.* 1885), *Carriereæ* (*Franch. in Rev. Hort.* 1896, *p.* 498, *fig.* 170), et *Idesiæ* (*Maxim.* ; *Bot. Mag. t.* 6794) ; a primo floribus vere unisexualibus perianthio 3–4-mero staminibus numerosissimis, a secundo floribus unisexualibus perianthio 3–4-mero seminibus circumalatis, a postremo perianthii lobis valvatis fructu capsulari differt, et ab omnibus foliis oppositis vel suboppositis recedit.

Flores unisexuales et probabiliter dioici ; feminini non visi, masculini in paniculas pyramidales erectas terminales dispositi. *Calyx* 3-partitus vel interdum 4-partitus, sericeo tomentosus, crassus, coriaceus, segmentis valvatis fere liberis ovato deltoideis 5–6 lin. longis. *Petala* nulla. *Stamina* numerosissima, quam calyx dimidio breviora, filamentis filiformibus glabris antheris basifixis loculis parallelis. *Ovarium* rudimentarium parvum, hirsutum. *Fructus* lignosus, capsularis, unilocularis, placentis 6 (an semper ?) parietalibus, anguste ovoideus, $3\frac{1}{2}$-4 poll. longus, utrinque attenuatus, brevissime denseque tomentosus, tarde dehiscens. *Semina* numerosissima, valde compressa, circumalata, ala tenuissima, magnitudine atque circumscriptione valde variabilia, sæpe subdolabriformia, maxima circiter 1 poll. longa ; albumen parcum ; embryo magnus, axilis, rectus, cotyledonibus orbicularibus, radicula tereti cotyledonibus æquali. Arbor 20-*pedalis, ramulis floriferis glabris subcompressis crebre lenticellatis.* Folia *ampla, opposita vel suboppositа, longe petiolata, tenuiter coriacea, oblonga vel elliptica, cum petiolo usque ad* 15–18 *poll. longa et* 5–7 *poll. lata, acuminata, basi rotundata, margine crenata, supra nitida, subtus parce pubescentia vel demum glabrescentia, venis primariis lateralibus numerosis prope marginem conjunctis atque secundariis tertiariisque subtus conspicuis ; petioli teretes vel supra leviter canaliculati, pubescentes,* $1\frac{1}{2}$-2 *poll. longi.* Paniculæ *florum masculinorum breviter pedunculatæ, circiter* 6 *poll. longæ.*

China : Mengtze, Yunnan, at 5000 feet, *A. Henry,* 9408, 10703.

Itoa, as will be understood from the comparisons made above, is one of a small group of allied genera, which are peculiar to China and Japan. This name has been given in honour of the patriarchal

Dr. Keisuké Ito, one of the pioneers of modern Botany in Japan, and of his grandson, Dr. Tokutaro Ito. A short memoir of the life and works of Dr. K. Ito, together with a portrait, appeared in the *Annals of Botany* in September, 1900, when he was already in his ninety-eighth year. He was a friend and pupil of P. F. von Siebold, whose acquaintance he made as long ago as 1826. His long life has been devoted to philanthropic and scientific work, and he has been the recipient of many honours, the last being his selection by his countrymen as one of 'The twelve Heroes of modern Japan.' An earlier portrait of K. Ito will be found in the *Journal of Botany* for 1887, with a brief 'History of Botany in Japan' by Dr. T. Ito, who worked at Kew in 1886-87, and enriched the library by the gift of a fine copy of the *Honzo Zufu* and several other illustrated Japanese botanical works. Among the botanical works on which he is at present engaged is a *Flora* of the Luchu Archipelago, in conjunction with Dr. J. Matsumura.

In Balansa's Tonkin collection (n. 4875) are fruits and seeds of *Itoa orientalis*, or of a closely allied species. The fruit differs, however, in being nearly globose in shape.—W. Botting Hemsley.

Fig. 1, a male flower with a tripartite calyx; 2, a male flower with a quadripartite calyx; 3, a longitudinal section of the same; 4 and 5, stamens; 6, seeds with part of testa removed; 7, section of seed, the wing removed, showing embryo.—*All more or less enlarged.*

6

7

3

4

2

5

1

Plate 2689.

OCHANOSTACHYS AMENTACEA, *Mast.*

Olacineæ. Tribe Olaceæ.

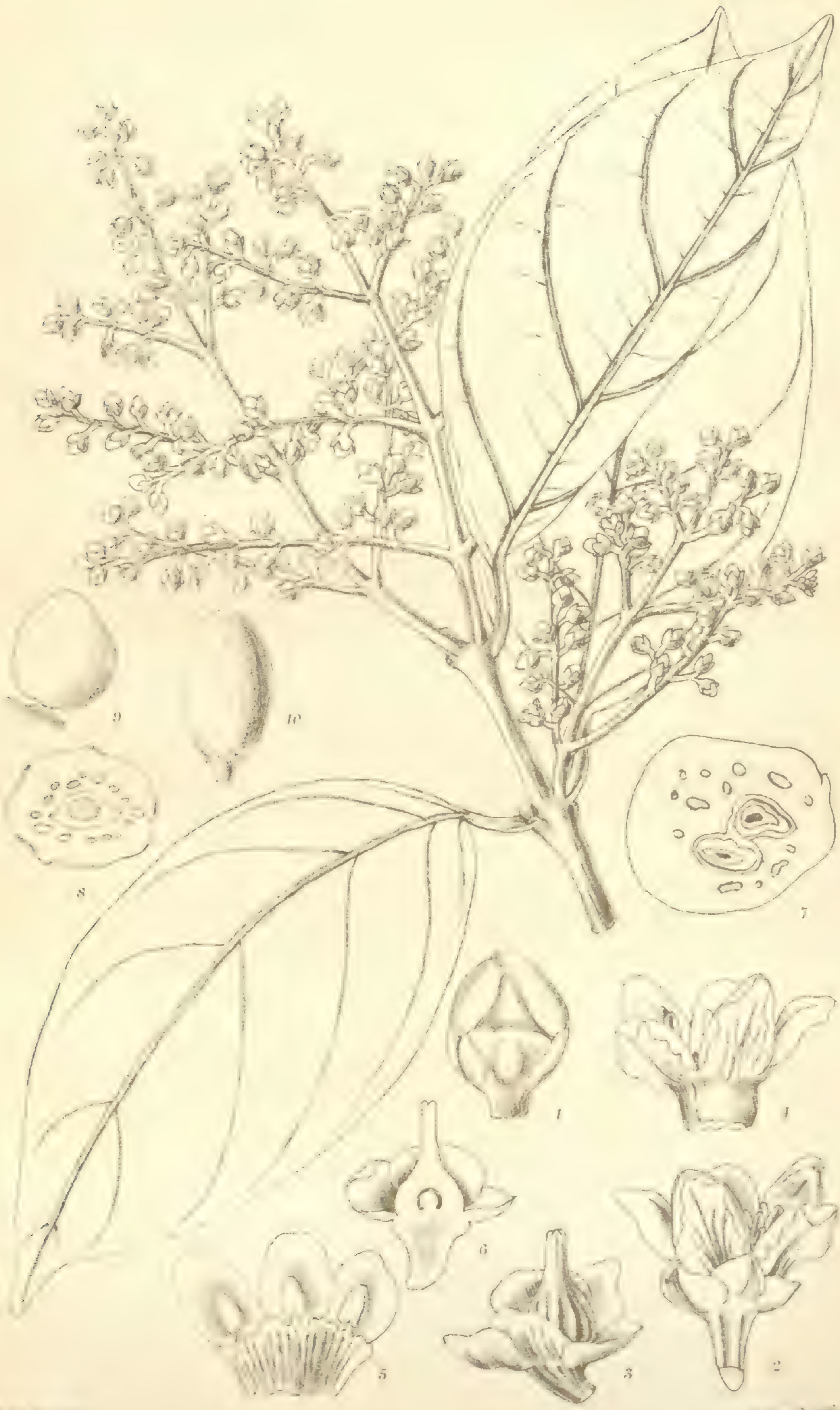
O. amentacea, *Mast. in Hook. f. Fl. Brit. Ind.* i. p. 576 (*species unica*).

Arbor pulchra, 40–130 ped. alta, trunco ad 3 ped. crasso, ramis divaricatis vel pendulis rubiginoso-brunneis deinde cinerascentibus. *Folia* elliptica vel oblonga, latitudine admodum varia, basi breviter acuta vel fere rotundata, apice breviter vel longiuscule obtuse acuminata, 2 ad fere 6 poll. longa, $1\frac{1}{2}$–$3\frac{1}{2}$ poll. lata, coriacea, in alabastris subtus fulvo- vel ferrugineo-puberula, plerumque cito omnino glabrata, supra nitida, magis minusve conspicue glanduloso punctata, nervis utrinque 5 6, rarius 7, obliquis arcuatis subtus prominentibus supra impressis, venis transversis inconspicuis ; petioli $\frac{1}{2}$ -1 poll. longi. *Flores* secus rhachin 1-4 poll. longam flexuosam minute puberulam vel subglabram in glomerulos 2 3-floros bractea parva lanceolata suffultos dispositi vel superiores solitarii, brevissime pedicellati, spicas interruptas axillares referentes, 4- vel 5-meri. *Calyx* late breviterque dentatus, basi pilis minutis ramosis furfuraceo-puberulus, margine ciliolato. *Petala* oblonga, subacuta, crassiuscula, $1\frac{1}{2}$ lin. longa, intus supra medium fasciculo pilorum munita, margine papillosa, cæterum glabra, basi primo conglutinata. *Stamina* 12-15 ; filamenta basi petalis agglutinata, glabra, 4 vel 5 inter petala posita cæteris paulo longiora, cætera per paria petalis opposita ; antheræ didymæ, connectivo punctiformi. *Discus* nullus. *Ovarium* globosum, basi sulcatum, glabrum, imperfecte 3-loculare ; stylus brevis, columnaris, stigmate minute 3-lobo. *Ovula* de axi apice ipso libera pendula, solitaria in utroque loculo, rhaphe dorsali. *Fructus* drupa pyriformis, 1–$1\frac{1}{2}$ poll. longus, $\frac{3}{4}$ poll. latus ; endocarpium lignosum, subtenue. *Semen* solitarium, globosum, 6-7 lin. dimetiens ; embryo minutus.—*Ochanostachys amentacea*, Valeton, Crit. Overz. d. Olac. p. 104 ; King, Mat. Fl. Malay. Penins. p. 588 (Journ. Asiat. Soc. Bengal, lxiv. ii. p. 100). *O. bancana*, Val. l. c. *Petalinia bancana*, Becc. Malesia, i. p. 257.

Malaya : Penang, *Curtis*, 1510. Perak, Larut, *King's collector*, 4523, 6705, 6747, 7800 ; *Wray*, 814. Malacca, *Maingay*, 1673, 2627 ; *Griffith*, 2500. Singapore, *Cantley*, 80. Bangka, *Teysmann*, 6718, 6719, 6723. Lingga, *Teysmann*, 6720. Borneo, *Lobb*. Sarawak, **near Kuching**, *Haviland*, 1950.

The two specimens from Borneo differ slightly from the rest in the presence of a more copious and more persistent rust-coloured tomentum. Haviland's, from which the drawing was made, has, moreover, remarkably small, narrow, and mostly 6-nerved leaves ; otherwise I cannot find any divergence from the usual more broad- and large-leaved form.—Otto Stapf.

Fig. 1, flower ; 2, corolla, flattened out, and stamens ; 3, young stamen ; 4, anther, dehisced, seen from the top ; 5, pistil ; 6, ovary and calyx, in longitudinal section ; 7, ovary, cross section.—*All enlarged.*



M S del et lith

C Stapf ad

Plate 2690.

SARCOSPERMA PANICULATUM, *Stapf and King.*

Sapotaceæ.

S. paniculatum, *Stapf et King* ; a *S. arboreo*, Hook f., inflorescentia glabra, floribus paulo minoribus, a ceteris generis speciebus foliorum forma diversa.

Arbor 50–70 ped. alta, glabra, trunco 15–20 poll. crasso, ramulorum cortice nigricante. *Folia* opposita vel subopposita, oblongo-elliptica vel subovata, subacuminata, basi rotundata, 3½–8½ poll. longa, 1½–2¾ poll. lata, coriacea, integra, supra nitida, viva pallide viridia, exsiccata fusco-nigricantia, secundum costam foveolis (domatiis) munita, nervis utrinque 5–8 curvatis, venis transversis obliquis laxis plerumque inconspicuis. *Flores* paniculati (rarius racemosi), in panicularum ramis divaricatis subsessiles, 1–3 bractea minuta suffulti ; panicula (vel racemi) 1–3 poll. longi. *Calyx* persistens ; sepala late rotundata, ½–¾ lin. longa, margine scariosa. *Corolla* breviter campanulata, viridi-alba, lobis tubo duplo longioribus late ovato-ellipticis obtusissimis, in alabastro late imbricatis, 1¼–1½ lin. longis, marginibus revolutis. *Stamina* 5, epipetala, corollæ supra faucem inserta ; filamenta brevissima ; antheræ ovatæ, ¾ lin. longæ, lateraliter rima dehiscentes ; staminodia squamæformia, minuta, obtusa vel crenulata, carnosa. *Ovarium* sulcatum, 1- vel imperfecte 2-loculare ; stylus columnaris, stigmate minute 2–4-crenulato ; ovula in loculis solitaria, a basi ascendentia. *Fructus* drupaceus, ellipsoideus, (immaturus) 9 lin. longus ; semina 1–2.—*Bracea paniculata*, King, Mat. Flor. Mal. Penins. p. 589 (Journ. Asiat. Soc. of Bengal, LXIV. ii. p. 101) ; Engler in Engl. & Prantl, Naturl. Pflanzenf. Nachtr. p. 149.

Malay Peninsula : Perak, in open, old jungle on the tops of low hills, 300–500 ft., *King's collector*.

The examination of the material of this species in the Kew Herbarium has resulted in the reduction of the genus *Bracea*, described as a member of the *Olacaceæ*, to *Sarcosperma*.—Otto Stapf and G. King.

Fig. 1, a bud ; 2, a flower ; 3, a calyx and pistil ; 4, a corolla ; 5, part of a corolla with stamens, flattened out ; 6, longitudinal section of a flower, with the corolla removed ; 7, cross section of an imperfectly 2-celled ovary with resin canals in the pericarp ; 8, cross section of a 1-celled ovary ; 9, an ovule ; 10, a young fruit.—*All enlarged.*

M S del et lith

Plate 2691.

GEOPHILA PILOSA, *H. H. W. Pearson.*

Rubiaceæ. Tribe Psychotrieæ.

G. pilosa, *H. H. W. Pearson (sp. nov.)*; species affinis *G. melanocarpæ*, Ridl., a qua stolonibus, foliisque pilosis et foliis minoribus præcipue differt.

Herba stolonifera, stolonibus caulibus foliisque minute pilosis, pilis multicellularibus. *Caulis* simplex, 2–6 poll. altus. *Folia* 2–4, opposita, petiolata, erecta; petioli dense minuteque pilosi, pilis patentibus, ½–1½ poll. longi; laminæ ovatæ, obtusæ vel fere acutæ, basi cordatæ, nervatione supra obscura subtus prominula, nervis primariis lateralibus utrinque 4–5 patentim ascendentibus intra margines arcuatim connexis, minute pilosæ pilis multicellularibus, brevibus, crispis, rectis appressisve, 1–1½ poll. longæ, ½–1 poll. latæ. *Stipulæ* interpetiolares, simplices, deltoideæ, obtusæ, pilosæ, 1 lin. longæ, basi ¾ lin. latæ. *Capitulum* triflorum, bractearum bracteolarumque pilosarum 6–8 involucro cinctum, pedunculo dense minuteque piloso pilis patentibus multicellularibus suffultum; bracteæ plus minus trilobatæ, 1½–2 lin. longæ; bracteolæ simplices lineares vel lineari-lanceolatæ, circiter 1 lin. longæ. *Flores* sessiles, albidi. *Calycis* tubus dense minuteque pilosus, ¾ lin. longus, lobos 5 lineari-oblongos obsolete 3-nervatos pilosos æquans. *Corollæ* tubus membranaceus, urceolatus, glaber, 1½ lin. longus; lobi ovati acuti, extus ad apicem parce pilosi, 1 lin. longi. *Stamina* 5, inclusa; antheræ oblongæ, panduratæ, obtusæ vel subacutæ, basi paulo bilobatæ, ½ lin. longæ; filamenta corollæ tubo tenui adhærentes. Discus cupularis, plus minus bivalvis, magnus, glaber. *Ovarium* 2-loculare, 2-ovulatum; stylus complanatus obsolete glandulosus, glaber, 1–1½ lin. longus; stigma breviter bilobum. *Bacca* ovoidea, angulata, calycis lobis persistentibus coronata, pilosa glabrescensve. *Semina* plano-convexa, jugo dorsali longitudinali instructa, circiter 2 lin. longa, 1½ lin. lata.

Singapore: Bukit Timah, *Ridley*, 9516. Borneo: *Barber*, 249.

I am not satisfied that *G. pilosa* is distinct from *G. hirta*, Korth., the meagre description of which (Nederl. Kruidk. Arch. ii. 2 [1851], p. 247) is insufficient for purposes of identification. Korthals's type is not in the Leyden Herbarium and is therefore probably lost. Under

these circumstances the publication of the plant as a new species seems justifiable.

G. pilosa bears a strong superficial resemblance to *G. hirsuta*, Benth., from Tropical Africa, and to *G. cordifolia*, Miq., a Guiana species, from both of which it is, however, very distinct ; its affinity is clearly with *G. melanocarpa*, Ridl. The specimen sent to us under this name by Mr. Ridley differs externally from *G. pilosa* principally in the glabrous condition of all its parts, though a very different habit is suggested by the figure accompanying the original description (*Trans. Linn. Soc.* [2] iii. Pl. 62).

The shedding of the branches accompanied by the formation of an absciss layer is not uncommon in the genus ; this is seen in *G. pilosa*, but even more markedly in *G. melanocarpa*, Ridl., and in the African *G. obvallata*, Didr. The branch is not detached as a whole ; its base slowly decays until all the tissue external to the corky plate disappears, leaving a clean scar, from which an adventitious root frequently emerges.—H. H. W. Pearson.

Fig. 1, portion of a leaf; 2, capitulum; 3, a flower with corolla and part of calyx removed showing gynæceum and disc ; 4, part of andrœcium ; 5, hair ; 6, seed. *All enlarged.*

5
6
4
3

Plate 2692.

LOBOSTEPHANUS PALMATUS, *N. E. Brown.*

Asclepiadaceæ. Tribe Ceropegieæ.

Lobostephanus, *N. E. Brown* (*genus novum*). *Calyx* 5-partitus, lobis lanceolatis acutis. *Corolla* campanulato-rotata, profunde 5-loba, lobis sinistrorsum obtegentibus. *Corona* duplex; exterior ima basi tubo stamineo et corollæ affixa, membranacea, basi cupularis, superne alte 10-loba (vel lingulis inclusis 20-loba); lobi erecti; 5 *minores* calycis lobis oppositi, inappendiculati; 5 majores corollæ lobis oppositi, intus bilingulati, lingulis lobos excedentibus; coronæ interioris squamæ 5, tubo stamineo affixæ, oblongæ, membranaceæ. *Stamina* basi corollæ affixa filamentis in tubum brevissimum connatis; antheræ erectæ, oblongæ, apice membrana parva terminatæ. *Pollinia* in quoque loculo solitaria, caudiculis longis subhorizontalibus pendula. *Ovarii* carpella 2, basi distincta, apice in stylo conjuncta, uniovulata; ovulum pendulum; stylus apice longe rostratus. *Folliculi* parvi, compressi, oblique obtriangulati, angulis breviter spinosis, monospermi. *Semen* lunato-curvatum, utrinque attenuatum, comosum, glabrum.

L. palmatus, *N. E. Brown* (*species unica*). *Caules* 3–4 ped. longi, graciles, unifariam puberuli. *Folia* petiolata, palmatim 5-loba, lobis linearibus, marginibus revolutis, lobo intermedio 1–1½ poll. longo, ½–1¼ lin. lato, lateralibus minoribus. *Umbellæ* 5–6-floræ, pedunculis 6–10 lin. longis, unifariam puberulis; bracteæ minutæ; pedicelli 1½–2 lin. longi, puberuli. *Corollæ* lobi 1 lin. longi, ½ lin. lati, lanceolati, obtusi, glabri. *Coronæ* exterioris lobi majores ⅓ lin. longi, oblongi, obtusi, ligulis ⅔ lin. longis linearibus obtusis; lobi minores ⅓ lin. longi, lineares, obtusi. *Coronæ* interioris lobi ¼ lin. longi, oblongi, obtusi vel retusi. *Folliculi* 3–3½ lin. longi et lati.

South Africa: Delagoa Bay, *Junod*, 502.

This is one of the most remarkable Asclepiads hitherto discovered, for besides being very distinct in its palmatifid leaves and many-lobed corona, it is absolutely unique in the Order in having 1 ovuled carpels and 1 seeded follicles. The triangular 3-horned follicles and curved seeds, which are quite destitute of the usual tuft of hairs at one end, are also quite unlike any other Asclepiad known to me. Its position in the system would appear to be near to *Eustegia*.—N. E. Brown.

Fig. 1, a flower; 2, a portion of the outer corona; 3, inner corona and beak of the style; 4 & 5, pollen masses in two positions; 6, a follicle; 7, a follicle in longitudinal section, showing the seed in its natural position.—*All enlarged.*

Plate 2693.

KICKXIA BORNEENSIS, *Stapf*.

Apocynaceæ. Tribe Echitideæ.

K. borneensis, *Stapf* (*sp. nov.*) ; a *K. Blancoi*, Rolfe, differt floribus brevissime pedicellatis, $1\frac{1}{2}$–$1\frac{2}{3}$ poll. longis, calycis segmentis acutis.

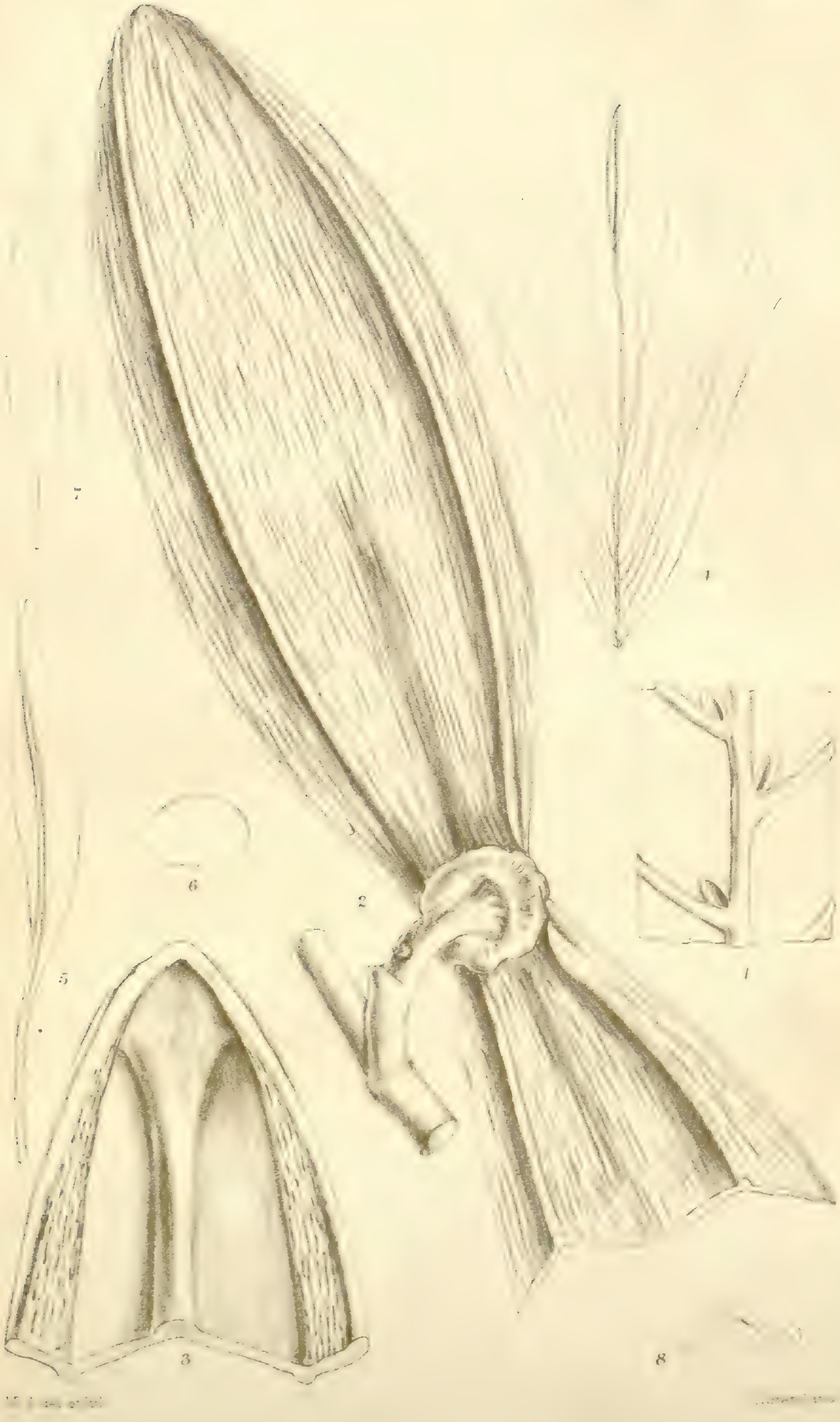
Frutex 6 ped. altus. *Ramuli* juniores exsiccando nigro-fuscescentes, teretes, subgraciles. *Folia* brevissime petiolata ; lamina lanceolato-oblonga, basi subacuta, apice acuminata, 4–$4\frac{1}{2}$ poll. longa, $1\frac{1}{3}$–2 poll. lata, integerrima, glaberrima, exsiccando supra nigro-fuscescens, subtus pallidior, coriacea, nervis secundariis utrinque circiter 9 subpatulis sub margine arcuatim connectis, tertiariis venisque inconspicuis ; petiolus $1\frac{1}{2}$–2 lin. longus. *Cymæ* axillares, brevissime pedunculatæ, paucifloræ, vel ad florem solitarium redactæ ; bracteolæ minutæ, obtusæ ; pedicelli brevissimi. *Flores* $1\frac{1}{2}$–$1\frac{2}{3}$ poll. longi. *Calyx* $2\frac{1}{2}$–3 lin. longus ; segmenta ovata, acuta, basi extus gibba, intus glandula solitaria oblonga applanata appressa munita. *Corolla* tubus e basi subventricosa ad constrictionem cylindricus, deinde campanulatus, parte inferiore 6 lin. longa, ubi angustissima $1\frac{1}{2}$ lin. lata, glabra, parte superiore 5 lin. longa, ore 3–$3\frac{1}{2}$ lin. lata, intus sparsim papilloso-pilosula ; lobi oblique porrecti, obtusi vel subacuti, 6 lin. longi, $1\frac{1}{2}$–2 lin. lati, intus basin versus sparsim papilloso-pilosuli, cæterum glabri. *Staminum* filamenta glabra ; antheræ $2\frac{1}{2}$ lin. longæ, apicem versus in dorso sparse pilosulæ. *Discus* inæqualiter 5 partitus. *Ovarium* cum stylo stigmateque 7 lin. longum. *Fructus folliculi* 6 poll. longi, coriacei, extus longitudinaliter striati. *Semina* ignota.

Borneo : Sarawak, *Lobb*.

This is one of the four Malayan species of *Kickxia*. An account of the African species described under this name may be found in the text, accompanying the two following plates.—Otto Stapf.

Fig. 1, a portion of the calyx and pistil ; 2, a corolla, opened and flattened out ; 3, an anther, front view ; 4, the same, back view ; 5, a portion of the follicle, cut out from the middle, showing the free inflexed placentas. —*All enlarged, with the exception of fig.* 5.

1
2
4
5


6
2
5
1
3
8

PLATES 2694–2695.

FUNTUMIA ELASTICA, *Stapf.*

APOCYNACEÆ. Tribe ECHITIDEÆ.

Funtumia, *Stapf* (*genus novum*). *Calyx* ad basin 5-partitus, intus glandulis munitus, persistens; segmenta imbricata, lata, magis minusve obtusa; glandulæ numerosæ vel paucæ, semper applanatæ, segmentis appressæ. *Corolla* hypocraterimorpha, parvula vel mediocris (tota longitudine pollicem unum haud excedens); tubus brevis, medio vel paulo supra medium ventricosus, superne crassissimus, carnosus, ore annulo crasso prominente cincto poriformi; lobi lineares vel oblongi, præfloratione dextrorsum obtegentes *Stamina* 5, in medio tubo inserta, in conum os vix attingentem arcte inclusum conniventia; filamenta brevissima, crassa; antheræ sagittatæ, intus basi glandula viscosa munitæ, cruribus duris solidis filamenta subexcedentibus; loculis angustissimis brevibus. *Discus* breviter tubulosus, 5-lobus vel 5-partitus, carnosus. *Carpella* libera, brevia, truncata, lateraliter in stylum abrupte constricta, e disco exserta vel ab eo paulo superata, vertice puberula; styli filiformes, supra coaliti, inerassati; stigma ovoideo-clavatum, ope antherarum glandularum cono staminali adhærens; placentæ ad basin bipartitæ, lamellis carpelli lateri ventrali plane adnatis, facie dorsali ovulis multiseriatim obsitis. *Fructus folliculi* distincti, breves vel elongati, divaricatim patentes, coriacei vel lignosi, secundum suturam dehiscentes; placentæ maturæ tantum zona angusta rugulosa utrinque secundum suturam percurrente indicatæ, cæterum a folliculi pariete haud distinctæ. *Semina* plurima, fusiformia, subsemiteretia, basi coma stipitata reverse plumosa ornata; rhaphe filiformis, prominula; testa tenuis; albumen carnosum strato tenui embryonem circumdans. *Embryo* elongatus, subsemiteres; radicula supera, longiuscula; cotyledones foliaceæ, longitudinaliter contortuplicatæ.—Arbores, *interdum excelsæ.* Folia *sempervirentia, coriacea.* Flores (*in alabastris maturis*) 4½–11 *lin. longi, numerosi, in axillis foliorum cymoso-congesti, breviter vel brevissime pedicellati, albidi vel flavescentes.* (Cf. Stapf in Proc. Linn. Soc., Decemb. 7, 1899.)

F. elastica, *Stapf in Proc. Linn. Soc., Dec.* 7, 1899.

Arbor ad 100 ped. alta. *Truncus* erectus, cylindricus; cortex extus pallidus, maculatus; ramuli teretes, exsiccando nigricantes; latex

copiosus, coagulando massam elasticam haud viscosam reddens. *Folia* petiolata ; lamina oblonga vel lanceolato-oblonga, basi attenuata, apice in acumen angustum plerumque acutum contracta, 5-9 poll. longa, $1\frac{1}{4}$–$2\frac{1}{2}$ poll. lata, integerrima, margine conspicue undulata et exsiccando revoluta, glaberrima, sicca fusca, subtus pallidior, in axillis inter costam et nervos secundarios distincte foveolata (domatiis instructa), nervis secundariis utrinque 7–11 subpatulis sub margine arcuatim connexis, tertiariis venisque inconspicuis ; petiolus 2–5 lin. longus. *Cymæ* breviter pedunculatæ, multifloræ, congestæ, glabræ ; pedunculus ad 3 lin. longus ; bracteæ parvæ, late ovatæ, obtusæ vel subacutæ ; pedicelli $1\frac{1}{2}$–$2\frac{1}{2}$ lin. longi. Flores albi vel flavescentes ; alabastra conica, brevia, ad 6 lin. longa. *Calyx* 2–$2\frac{1}{4}$ lin. longus ; segmenta latissima, ovata vel rotundata ; glandulæ plerumque 2 cum unoquoque segmento. *Corollæ* tubus supra basin constrictus, $3\frac{1}{2}$–4 lin. longus, glaber ; lobi oblongi, obtusi, $2\frac{1}{2}$–3 lin. longi. *Stamina* infra medium tubum inserta ; filamenta intus minute tomentella ; antheræ acuminatæ, apice minute pilosulæ. *Discus* 5-partitus, segmentis crenatis, ovarium paulo superans. *Fructus folliculi* clausi oblongo-clavati, apice obtusi vel rotundati, sectione transversa elliptica, plane aperti oblongo-elliptici, ad 2 poll. lati, lignosi, in lateribus vix longitudinaliter angulati, circa 6 poll. longi. Semina 6–9 lin. longa ; arista $1\frac{1}{2}$–$2\frac{3}{4}$ poll. longa, ad medium nuda, pilis ad $2\frac{1}{2}$ poll. longis.—*Kickxia elastica*, Preuss in Notizbl. Bot. Gart. und Mus. Berlin, ii. pp. 353–360, t. i. ; Schlechter in Tropenpfl. iv. pp. 109–120 ; DeWildeman in Rev. Cult. Col. vii. pp. 633, 634, and 743–747. *K. africana*, Stapf in Kew Bull. 1895, cum icone * ; K. Schum. in Notizbl. Bot. Gart. und Mus. Berlin, i. pp. 217–221, cum icone * ; Warb. in Zeitschr. f. trop. Landwirthsch. (Tropenpfl.), i. pp. 99–103, cum icone * ; Lecomte in Rev. Cult. Col. i. pp. 12–19, 41–47, fig. 2 * ; Jumelle, Les Plantes à Caoutchouc, pp. 68–73, fig. 10 * ; non Benth.

West Africa. Gold Coast, Mampong hills, *Johnson*. Sefeohi and Wan District, *Armitage*. Ashanti, Kumassi, *Cummins*, 217. Lagos, Jehu District, *Millen*, 178. Yoruba, Ibadan, *Olubi* ; dense forests near Shagamo and Ibadan, *Schlechter*. Lower Nigeria, Old Calabar, *Lloyd* ; between Ekuke and Abaragba, *Holland*, 158, 161 (some of the fruits have remarkably small follicles). Cameroons, right bank of Mungo River, between Malende and Nyoke, and between Nyoke and Moyoka, *Preuss*, 1381 ; forests on the Upper Mungo River as far as the Bakossi Mountains, *Schlechter* ; plentiful in the basin of the Ngoko and Dscha, *Schlechter*.

At a meeting of the Linnean Society, on December 7, 1899, I pointed out that the African species described under *Kickxia* differed very essentially from the Malayan species of *Kickxia*, and I proposed then the name *Funtumia* (derived from 'Funtum,' one of the vernacular names of *F. elastica*) for the first group, reserving *Kickxia* for the other, as this genus was based on the Javanese *Kickxia arborea*. As I

* Quoad fructus.

had already prepared an elaborate report, dealing with the whole question, for publication elsewhere, I confined myself to a short note in the *Proceedings* of the Linnean Society of the meeting referred to above, reserving a fuller discussion of the differences of the two genera until the publication of the report. Of those differences I mention in this place only the most obvious. The cymes of *Kickxia* are few-flowered or reduced to a single flower; those of *Funtumia* are gathered in congested, many-flowered panicles. The corolla of *Kickxia* is funnel-shaped, not salver-shaped, and compared with that of *Funtumia* large (1½–4 in. long); the tube is narrowest (not widest) near the middle and widened above into a cup or bell-shaped portion into which the staminal cone projects, while in *Funtumia* it is completely and tightly enclosed in the tube, which is, apart from a small orifice, closed at the mouth. The follicles are more or less parallel in *Kickxia*, but spreading at right angles to the pedicel in *Funtumia*. The placentas of *Kickxia* are bilamellate, the lamellæ are free and remain free; in *Funtumia*, on the other hand, they are fused with the ventral wall of the carpels, and are, in the mature state after the seeds have fallen, only distinguishable as a narrow more or less rough zone along both sutures.

At the time I discussed the characteristics of the genera *Funtumia* and *Kickxia* before the Linnean Society, there were three species, described under *Kickxia*, referable to *Funtumia*, viz. *Kickxia africana*, Benth., now *Funtumia africana*, Stapf; *K. elastica*, Preuss, now *F. elastica*, Stapf, and *K. latifolia*, Stapf, which will have to stand as *F. latifolia*, Stapf. *F. africana* and *F. elastica* are described and figured in this place under Nos. 2694–2397, where all the literary references may be found. *F. latifolia* was described first as *K. latifolia* in *Kew Bulletin*, 1898, p. 307, and in *Ann. Mus. Congo*, Sér. 2, I. i. p. 42, and figured in *Notizbl. Bot. Gart. und Mus. Berlin*, ii. p. 355, fig. F, G, H. Since then four more species have been described under *Kickxia* which belong evidently to *Funtumia*, viz. *K. Scheffleri*, K. Schum., from German East Africa, *K. Zenkeri*, K. Schum., from the Cameroons, and *K. Gilletii*, De Wild., and *K. congolana*, De Wild., both from the Lower Congo. I have seen no specimens of those four new species. *K. Zenkeri* is evidently very similar to *F. africana*, while the three other species are compared by the authors with *F. latifolia*, to which they seem to approach so closely that one or two of them may prove to be identical with it.—Otto Stapf.

Plate 2694.—Fig. 1, a flower; 2, a flower in longitudinal section; 3, portion of a calyx with the pistil surrounded by the disc; 4, an anther, front view; 5, cross-section through an ovary,—*All enlarged.*

Plate 2695.—Fig. 1, a portion of a leaf, underside; 2, a pair of open follicles, seen from the back; 3, tip of a follicle; 4, a seed; 5, the same without the plume; 6, cross-section through the seed; 7, embryo.—*All enlarged, with the exception of figures* 2 *and* 4.

4
2
3

M.S.del. et lith

Plates 2696–2697.

FUNTUMIA AFRICANA, *Stapf.*

Apocynaceæ. Tribe Echitideæ.

F. africana, *Stapf in Proc. Linn. Soc., Dec.* 7, 1899. *Arbor* 15-80 ped. alta. *Truncus* erectus, cylindricus; cortex sublævis, extus cinereus, medio fuscus, intus albidus; ramuli teretes vel sub nodos compressi, exsiccando plerumque nigricantes; latex copiosus, albus, coagulando viscosissimus. *Folia* petiolata, forma et magnitudine admodum variabilia; lamina oblonga, rarius ovato-oblonga, basi attenuata vel interdum rotundata, apice breviter et abrupte acuminata, 5-9 poll. longa, $1\frac{1}{2}$-$3\frac{1}{2}$ poll. lata, integerrima, margine undulata et exsiccando revoluta, supra glaberrima, sicca plerumque fusca, infra in axillis inter costam et nervos secundariis plerumque pubescens et efoveolata, nervis secundariis utrinque 9-10 (raro 11), subpatulis, sub margine arcuato-connexis, tertiariis venisque inconspicuis; petiolus 2-4 lin. longus. *Cymæ* breviter pedunculatæ, multifloræ, congestæ, glabræ; pedunculus 3 lin. longus; bracteæ parvæ, ovatæ, acutæ vel subacutæ, pedicelli ad 2 lin. longi. *Flores* flavescentes, alabastra subcylindrica, paululo curvata, 7–9 lin. longa. *Calyx* $1\frac{3}{4}$ lin. longus; segmenta late ovata vel elliptica, margine minute ciliolato excepto glabra; glandulæ plures cum unoquoque segmento lobulatæ. *Corollæ* tubus paulo infra medium constrictus, 3-4 lin. longus, glaber; lobi lineares, 5–6 lin. longi. *Stamina* medio tubo vel paulo supra inserta, filamenta intus minute tomentella; antheræ acuminatæ, apice minute pilosulæ. *Discus* 5-lobus vel ad basin 5-partitus, ovario $\frac{1}{3}$ brevior. *Fructus folliculi* fusiformes, acute-acuminati, semiteretes, ventre applanati, in lateribus utrinque longitudinaliter angulati, ad 8 poll. longi, angulis $1\frac{1}{2}$–2 lin. distantibus. *Semina* 6-8 lin. longa.; arista $1\frac{1}{4}$-$1\frac{3}{4}$ poll. longa, basi nuda, pilis $2\frac{1}{2}$ poll. longis.—*Kickxia africana*, Benth. in Hook. Icon. Plant. t. 1276. Stapf in Journ. Linn. Soc. xxx. p. 90, and in Kew Bull. 1895, p. 244, cum icone*; K. Schum. in Notizbl. Bot. Gart. und Mus. Berlin, i. pp. 217–221, cum icone*; Warb. in Zeitschr. f. trop. Landwirthsch. (Tropenpfl.), i. pp. 99–103, cum icone*; Lecomte in Rev. Cult. Col. i. pp. 12-19, 41-47, fig. 1 and 2; Preuss in Tropenpfl. iii. pp. 65, 71; Jumelle, Les Plantes à Caoutchouc, pp. 68-73, fig. 10*; Preuss in Notizbl. Bot. Gart.

* Descriptione et figuris fructuum exceptis.

und Mus. Berl. ii. pp. 353-360, t. 2. Schlechter in Tropenpfl. iv. pp. 326 330, De Wildeman in Rev. Cult. Col. vii. pp. 633, 634 and 747. *K. africana* var. *Klainii* and var. *iners*, Pierre, MSS.—Otto Stapf.

West Africa : Sierra Leone, without precise locality, *Scott Elliot* and *Haydon* ; near Kukuma on the Scarcies River, *Scott Elliot*, 4506 (a fruit-bearing branch with almost bright green and quite glabrous leaves) ; Bagroo River, *Mann*, 817. Ivory Coast, Dobou, *Jolly*, 174. Gold Coast, Sefeohi and Wam District, *Armitage* ; Mampongo Hills, *Johnson*, 434 ; E. Akim, *Johnson*, 692. Lower Nigeria, Bonny, *Kalbreyer*, 82 (detached leaves, open follicles and seeds ; the follicles are rather less coriaceous than in the other specimens) ; Opobo, *Holland*, 157 ; Cross River, *Holland*, 5 ; Cameroons, virgin forest near Victoria, *Preuss*, 1382 ; Gaboon, Libreville, *Klaine*, 662. Fernando Po, *Mann*.

Very common in Togoland in the forests of the Agome Mts. and in the Boëm country, according to *Schlechter*, and also observed in Lower Nigeria between Ekuke and Abaragha by *Holland* and in the Cameroons in the forests of the upper basin of the Mungo River by *Schlechter* ; also common in the hill forests of the coast region of the Cameroons according to *Dr. Preuss*.

Plate 2696. **Fig. 1, a flower-bud** ; 2, a corolla in longitudinal section ; 3, a calyx segment, seen from within ; 4, a pistil, surrounded by the disc.—*All enlarged.*

Plate 2697. Fig. 1, a portion of a leaf, under side ; 2, a portion of a follicle, cut out of the middle ; 3, tip of a follicle ; 4, a seed ; 5, the same, without plume.—***All enlarged, with the exception of fig. 4.***

M.S. del. et lith.

O.Stapf anal.

Plate 2698.

PANICUM PHYLLOPOGON, *Stapf.*

Gramineæ. Tribe Paniceæ.

P. (§ **Echinochloa**) **phyllopogon**, *Stapf* (*sp. nov.*) ; affinis *P. Crus galli*, *L.*, sed duratione bienni, habitu stricto, caule compresso, foliis basalibus peralte carinatis ad laminæ basin extus longe denseque barbatis laminis longis angustis inferne arcte plicatis diversa.

Gramen bienne, fasciculatum, 3–4 ped. altum. *Caulis* stricte erectus, 6–7-nodosus, procerus, compressus, glaberrimus, levis, superne ramosus, i. e. e vagina antepenultima vel etiam e penultima ramum florentem edens. *Vaginæ foliorum* basalium e basi latiuscule scariosa angustatæ, compressæ, alte carinatæ (imprimis superne), leves, ad laminæ conjunctionem dorso dense villoso-barbatæ, insuper ad margines summos pilis tuberculo fasciculatim insidentibus setoso-ciliatæ, cæterum glabræ ; vaginæ foliorum summorum minus vel vix carinatæ, omnino glabræ ; ligulæ nullæ ; laminæ foliorum basalium anguste lineares, longe tenuissime attenuatæ, inferne peralte carinatæ, arcte plicatæ, 1–1¾ ped. longæ, explanatæ 1–2 lin. latæ, secundum margines cartilagineos asperrimæ, apicem versus utrinque scabridæ ; laminæ foliorum superiorum latiores, ad 4 lin. latæ, brevius attenuatæ, basi breviter in vaginam decurrentes, magis minusve planæ, costa media tenuiore. *Panicula* angusta, nutans, 4–5 poll. longa, subsecunda ; axis triquetra, ad angulos scabra, ad nodos setoso-barbata pilis tuberculis insidentibus ; rami rhachi subappressi, graciles, circiter 12, infimi ad 1¼ poll. longi, rhachi acute triquetra setosa ; pedicelli fasciculati, brevissimi, apice discoidei. Spiculæ ovoideo-ellipsoideæ, 1½ lin. longæ, tandem fuscescentes. *Gluma* inferior membranacea, perlata, breviter cuspidata vel acuta, 3-nervis, ½ lin. longa, superior elliptica, cuspidato-acuminata, spiculam æquans, herbaceo membranacea, 5-nervis, rigide pubescens, inter nervos et superne undique spinuloso-scabra vel secundum nervos spinuloso-setosa. *Valva* inferior (sterilis) glumæ superiori similis sed paululo minor, dorso subapplanata, nervis 5 tenuioribus, in aristam 4–8 lin. longam scaberulam abiens, paleam subæquilongam hyalinam includens ; valva superior (fertilis) late ellipsoidea, cuspidata, 1½ lin. longa, nitens, brunnea vel grisea, obscure 5-nervis, crustacea, cum palea simili 2-nervi.

Italy : in rice fields near Pisa, *Arcangeli.*

The specimens from which this species is described were communicated by Professor Arcangeli, according to whom this grass first made its appearance in rice fields in Novara in 1896, where certain Asiatic varieties of rice had been sown. As a weed it is worse than the common *P. Crus galli*, and has caused considerable damage to the rice fields. Although the structure of the spikelets is practically the same as in *P. Crus galli*, the habit and particularly the leaves are so distinct from those of *P. Crus galli*, as well as of all the other species of the section *Echinochloa*, that I have not hesitated in adopting Professor Arcangeli's view that it is a distinct species.—Otto Stapf.

Fig. 1, portion of an upper leaf showing the junction of sheath and blade, front view; 2, the same, back view; 3, portion of a basal leaf, showing the junction of sheath and blade, flattened out, front view; 4, the same, folded, side view; 5, cross section through the blade of a basal leaf; 6, a spikelet, with the lower glume and lower valve in front; 7, the same, with the upper glume in front. The sheath and blades of the barren tuft of leaves are not quite correctly represented, as some of them might create the impression of being open and having bearded ligules.—*All enlarged.*

5
6
4
3
1
2

Plate 2699.

GYMNOPODIUM FLORIBUNDUM, *Rolfe.*

Polygonaceæ. Tribe Triplarideæ.

Gymnopodium, *Rolfe* (*genus novum*). *Flores* hermaphroditi. *Perianthii* segmenta 6, 3 exteriora majora, carina exalata, 3 interiora minora, plana, erecta. *Stamina* 9, ad basin perianthii biseriatim affixa, 6 exteriora ad margines perianthii segmentorum interiorum prope basin adnata, 3 interiora libera; filamenta filiformia; antheræ ovatæ. *Ovarium* glabrum; styli breves, filiformes, apice capitato-stigmatosi; ovulum erectum, subsessile. *Nux* acute trigona, perianthio aucto clauso inclusa; semen trigonum; embryo magnus, cotyledonibus orbicularibus.

G. floribundum, *Rolfe* (*species unica*). *Frutex* ramosissima, ramis gracilibus subflexuosis parce pilosis. *Folia* alterna vel fasciculata, breviter petiolata, cuneato-oblonga, obtusa, glabra, reticulato-venosa, $\frac{3}{4}$–$1\frac{1}{2}$ poll. longa, 3–6 lin. lata; petiolus 1–$1\frac{1}{2}$ lin. longus; ochrea brevissima. *Racemi* graciles, interdum parce ramosi, laterales et terminales, $1\frac{1}{2}$–3 poll. longi. *Bracteæ* ochreatæ, parvæ, apices angustæ, reflexæ. Flores parvi, graciliter pedicellati. *Perianthii* segmenta biseriata, exteriora ovata, acuta, 1 lin. longa, fructifera ad 5 lin. longa, reticulato-venosa, interiora lanceolata, acuta, minora. *Stamina* inclusa. *Nux* 3 lin. longa.

British Honduras: Manatee, pine ridges, *E. J. F. Campbell*, 60.

An interesting monotype, allied to *Podopterus*, Humb. et Bonpl., of which it has much the general appearance, but differs in its wingless pedicels, and in having an additional whorl of three stamens, which are situated opposite the concave faces of the ovary, and within the outer series of six.—R. Allen Rolfe.

Fig. 1, a flower; 2, a petal with two stamens of the outer whorl adnate to the margins at the base; 3, a pistil and the three stamens of the inner whorl; 4, the ovary in longitudinal section, and 5, in transverse section; 6, the seed in longitudinal section, showing the embryo.—*All enlarged.*

M. S. del. et lith.

Plate 2700.

LESPEDEZA VELUTINA, *Dunn.*

Leguminosæ. Suborder Papilionaceæ.

Lespedeza velutina, *Dunn* (*sp. nov.*) ; inter species asiaticas vestitu distincta.

Frutex 2–4 pedalis (*A. Henry*), caulibus petiolisque velutino-pubescentibus. *Folia* ampla, trifoliolata, omnia petiolata ; petioli 1–2 poll. longi ; stipulæ parvæ, lanceolatæ. *Foliola* subcoriacea, supra velutina, viridia, infra molliter canescentia, oblongo-lanceolata vel oblongo-linearia, 3–5 poll. longa ; lateralia brevissime petiolulata, terminalis petiolulus ½–1 poll. longus, venis infra prominentibus crebris ; stipellæ nullæ. *Racemi* in ramorum apicibus et etiam in axillis foliorum superiorum solitarii vel fasciculati vel paniculati. *Flores* albi vel rubro tincti (*A. Henry*), 5 lin. longi, breviter graciliterque pedicellati ; pedicelli calyce breviores ; bracteæ lineari-lanceolatæ, citissime deciduæ ; bracteolæ 2, tiliformes, sericeæ, a basi calycis ortæ et tubum ejus æquantes, tarde deciduæ. *Calyx* brunneo-sericeus, corolla dimidio brevior, lobis 4 subæqualibus linearibus tubum superantibus. *Carina* acuminata, obtusa, vexillum æquans, alas superans. *Stamen* vexillare fere liberum. *Legumen* immaturum ovatum, apice basique acutum, reticulatum, sparse hirtum.

China : Yunnan, near Manpan in the Red River valley, at 3000 feet ; and in the Mengtze forests at 4600 feet. *A. Henry*, 10447.

Maximowicz, in his Synopsis of this Genus (*Act. Hort. Petrop.* ii. p. 345), shows the importance for the purpose of classification of observing the relative persistence of the bracts and bracteoles. In this respect the present species stands alone in § *Campylotropis* with *L. ciliata*, the only member of the section with which it is closely associated geographically.—S. T. Dunn.

Fig. 1, flower from which petals have been removed and calyx laid open; 2, standard ; 3, a keel-petal ; 4, a wing-petal ; 5, ovary in section.—*All enlarged.*

INDEX TO SPECIES AND SYNONYMS.

	Plate
Achneria capillaris, *Stapf* . . .	2604
Acicarpha rosulata, *N. E. Brown*	2636B
Actinostemma biglandulosum, *Hemsl.* ♂	2622
—— biglandulosum, *Hemsl.* ♀ .	2645
Allospondias lakonensis, *Stapf* .	2667
Andropogon capillaris, Kunth. .	2604
Arundinaria auricoma, *Mitford* .	2613
Aspidopterys obcordata, *Hemsl.* .	2673
Bambusa Fortunei, var. *aurea*, Hort.	2613
—— *Henonis*, Hort.	2614
Begonia bretschneideriana, *Hemsl.*	2635
—— Warpuri, *Hemsl.*	2656
Benthamiella Nordenskioldii, *Dusén*	2636A
Botryopleuron axillare, *Hemsl.* .	2670
—— latifolium, *Hemsl.*	2670
—— stenostachyum, *Hemsl.* . .	2670
—— venosum, *Hemsl*	2670
Brizopyrum ciliare, *Stapf* . . .	2602
—— glomeratum, *Stapf* . . .	2603
Calorhabdos *axillaris*, Benth. et Hook. f.	2670
—— brunoniana, *Benth.* . . .	2669
—— cauloptera, *Hance* . . .	2669
—— *Fargesii*, Franch. . . .	2668–70
—— *latifolia*, Hemsl.	2670
—— *stenostachya*, Hemsl. . . .	2670
—— *sutchuenensis*, Franch. .	2668–70
—— *venosa*, Hemsl.	2670
Canarium Pimela, Kon. . . .	2641
Castilloa australis, *Hemsl.* . .	2676
—— *costaricana*, Liebm. . . .	2651
—— *elastica*, Cerv.	2651
—— *markhamiana*, Collins . .	2651
—— *markhamiana*, Markham .	2651
—— Tuna, *Hemsl.*	2651
Catasetum labiatum, *Rodr.* . .	2617
Chloridion Cameroni, *Stapf* . .	2640
Clerodendron subscaposum, *Hemsl.*	2675
Cochlearia Hobsoni, *Pears.* . .	2643
Couepia dodecandra, *Hemsl.* . .	2620
Crossotropis grandiglumis, *Stapf*	2609
Cyclocheilon *eriantherum*, Engl.	2685
—— minutibracteolatum, *Engl.* .	2685
Cydonia cathayensis, *Hemsl.*	2657–58
—— *sinensis*, Thouin	2658
Dactylis ciliaris, Thunb. . . .	2602
Danthonia oreoboloides, *Stapf* .	2606
Deyeuxia sclerophylla, *Stapf* . .	2605
Dichotomanthes tristaniæcarpa, *Kurz*	2653
Didesmandra aspera, *Stapf* . .	2646
Diplachne grandiglumis, Hack. .	2609
Diplocentrum congestum, *Wight*	2687
Dischidia Cominsii, *Hemsl.* . .	2674
Dolicholobium acuminatum, *Burkill*	2630
—— *latifolium*, A. Gray . . .	2630
—— *longissimum*, Seem. . . .	2630
Dracontomelum (?) *mangiferum*, Hemsl.	2641
—— sinense, *Stapf*	2641
Dumasia cordifolia, *Benth.* . .	2627
Echinocarpus *dasycarpus*, Benth.	2628
—— *sinensis*, Hance	2628
—— *sinensis*, Hemsl.	2628
Eryngium Goldmani, *Hemsl.* . .	2638
Excæcaria biglandulosa, Muell. Arg.	2647
—— —— var. *aucuparia*, Muell. Arg.	2650
—— —— var. *moritziana*, Muell. Arg.	2677
—— *obtusiloba*, Muell. Arg. . .	2650
—— *suberosa*, Muell. Arg. . .	2681

	Plate
Festuca oreoboloides, F. Muell. .	2606
Funtumia africana, *Stapf* . .	2696–97
—— elastica, *Stapf*	2694–95
—— *latifolia*, Stapf	2694
Genlisea guianensis, *N. E. Brown*	2629
Geophila *hirta*, Korth.	2691
—— pilosa, *Pears.*	2691
Giulianettia tenuis, *Rolfe* . . .	2616
Gymnopodium floribundum, *Rolfe*	2699
Habenaria *radicans*, Griseb. . .	2686
—— repens, *Nutt.*	2686
—— *tricuspis*, A. Rich. . . .	2686
Helicia grandis, *Hemsl.* . . .	2631
Hippomane biglandulosa, L. . .	2650
—— *foliis ovato-oblongis*, Plum.	2650
Hirtella dodecandra, DC. . . .	2620
Holcus capillaris, Thunb. . . .	2604
Impatiens grandiflora, *Hemsl.* .	2655
Itoa orientalis, *Hemsl.*	2688
Kickxia *africana*, Benth. . .	2694–97
—— borneensis, *Stapf*	2693
—— *congolana*, De Wild. . . .	2694
—— *Gilletii*, De Wild.	2694
—— *Scheffleri*, De Wild. . . .	2694
—— *Zenkeri*, K. Schum. . . .	2694
Kœleria Gerrardi, Munro & Benth.	2612
Kœlreuteria *bipinnata*, Franch. .	2642
—— minor, *Hemsl.*	2642
—— *paniculata*, Laxm. . . .	2642
Lacmellea edulis, Karst. . . .	2637
Lasiochloa alopecuroides, Hack.	2612
Leptochloa falcata, Hack. . . .	2610
—— *grandiglumis*, Nees . . .	2609
Lespedeza diversifolia, *Hemsl.* .	2625
—— velutina, *Dunn*	2700
Leycesteria *formosa*, Wall. . .	2633
—— *glaucophylla*, Hook. f. . .	2633
—— sinensis, *Hemsl.*	2633
Lightfootia leptophylla *C. H. Wright*	2659
Lobostephanus palmatus, *N. E. Brown*	2692
Lonicera calcarata, *Hemsl.* . .	2632
Lophacme digitata, *Stapf* . .	2611
Lysimachia insignis, *Hemsl.* . .	2634
Melinis tenuissima, *Stapf* . . .	2660
—— —— var. abyssinica, *Stapf*	2660
Monadenium echinulatum, *Stapf*	2666
—— læve, *Stapf*	2666
Moquilea platypus, *Hemsl.* .	2618–19
Ochanostachys amentacea, *Mast.*	2689
Onosma *burmanicum*, Coll. et Hemsl.	2639
—— exsertum, *Hemsl.*	2639
—— *paniculatum*, Bur. et Franch.	2639
Osteomeles *anthyllidifolia*, Lindl.	2644
—— subrotunda, *C. Koch* . .	2644
Pæderota axillaris, Sieb. et Zucc.	2670
Pandanus Cominsii, *Hemsl.* . .	2654
Panicum phyllopogon, *Stapf* .	2698
Passiflora franchetiana, *Hemsl.* .	2623
—— Henryi, *Hemsl.*	2623
Perebea guianensis, Aubl. . . .	2651
—— *markhamiana*, Hemsl. . .	2651
Phœnicospermum, Miq.	2628
Phyllostachys Henonis, *Mitford* .	2614
Plectranthus calcaratus, *Hemsl.* .	2671
Poa *glomerata*, Thunb.	2603
—— minimiflora, *Stapf.* . . .	2608
—— papuana, *Stapf.*	2607
Pogonarthria falcata, *Rendle* . .	2610
Polakia paradoxa, *Stapf.* . . .	2615
Pyrus cathayensis, Hemsl. . .	2658
Quercus Blakei, *Skan*	2662
—— cornea, *Lour.*	2665
—— Edithæ, *Skan*	2661
—— fordiana, *Hemsl.*	2664
—— *hemisphærica*, Drake . .	2665
—— Rex, *Hemsl.*	2663
Ranalisma rostrata, *Stapf.* . .	2652
Salvia anisodonta, Hausskn. & Briq.	2615
—— *aristata*, Auch.	2615
—— *Owerini*, Trautv.	2615
Sapium aereum, Kl.	2682
—— *arboreum foliis ellipticis, &c.* P. Browne	2650
—— aucuparium, *Jacq.* . . .	2650
—— *biglandulosum*, Muell. Arg.	2647
—— —— var. *hamatum*, Muell. Arg.	2678
—— —— var. *moritzianum*, Muell. Arg. . . .	2647, 2677
—— ciliatum, *Hemsl.*	2683
—— cupuliferum, *Hemsl.* . . .	2679
—— *Hippomane*, Mey.	2650
—— *jamaicense*, Sw.	2650
—— Jenmani, *Hemsl.*	2649
—— lateriflorum, *Hemsl.* . . .	2680
—— *Laurocerasum*, Desf. . .	2650
mexicanum, *Hemsl.* . . .	2680
—— moritzianum, *Kl.*	2677
—— *obtusilobum*, Muell. Arg. .	2650
—— paucinervium, *Hemsl.* . .	2648
—— Pœppigii, *Hemsl.*	2678

	Plate
Sapium *stylare*, Muell. Arg.	2647
—— suberosum, *Muell. Arg.*	2681
—— subsessile, *Hemsl.*	2684
—— *Thomsoni*, Hort.	2647
—— *Tolimensi*, Hort.	2647
—— verum, *Hemsl.*	2647
Scrofella chinensis, *Maxim.*	2668
Secale africanum, *Stapf*	2601
—— *cereale*, Thunb.	2601
Shortia sinensis, *Hemsl.*	2624
Shuteria sinensis, *Hemsl.*	2626
Sloanea *dasycarpa*, Hemsl.	2628
—— *hanceana*, Hemsl.	2628
—— hongkongensis, *Hemsl.*	2628
—— *jamaicensis*, Hook.	2628
—— *Massoni*, Sw.	2628
Sloanea sinensis, Hemsl.	2628
Sorghum capillare, Rœm. & Schult.	2604
Spondias? lakonensis, Pierre	2667
Stillingia biglandulosa, Baill.	2647
Tinnea arabica, Baker	2685
—— *erianthera*, Vatke	2685
Tithymalus arbor americanus, Pluk.	2650
Triphlebia alopecuroides, *Stapf*	2612
Tupidanthus calyptratus, *Hook. f. et Thoms.*	2672
Zschokkea utilis, *Hemsl.*	2637

PRINTED BY
SPOTTISWOODE AND CO. LTD., NEW-STREET SQUARE
LONDON

The impression of the 'Icones' is limited to 250 copies, and the work will not be reprinted.

A small number of copies of the Third Series, comprising 1,000 plates, is offered for sale at £5 each.

Application should be made to Messrs. DULAU & CO., *37 Soho Square.*